EXPERIMENTAL STUDIES IN PSYCHOLOGY AND PEDAGOGY

EDITOR:
LIGHTNER WITMER
UNIVERSITY OF PENNSYLVANIA

VI

RETARDATION IN THE READING PUBLIC SCHOOLS

BY

AARON MOYER SNYDER, Ph.D.

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I.

INTRODUCTION.

During the last six years investigations have been conducted under the auspices of the Psychological Department of the University of Pennsylvania, to find out the various causes for the retardation of a large per cent of the boys and girls enrolled in the public schools. Although these and other investigations have done much to throw light upon the shortcomings and defects of the present elementary school system, much remains to be done. It was, therefore, with a view toward obtaining further knowledge in regard to the amount of retardation in each of the eight elementary grades and of finding some of the fundamental causes contributing thereto, that the present investigation was undertaken.

The original plan was to study the school history of the first year classes enrolled in the Reading high schools in September, 1908, tracing the children back for at least eight years to the time when normally they should have entered the first grade, and including all who had ever belonged to these classes. A careful examination of the available data, however, soon disclosed the fact that previous to 1905 the records were imperfect, and even as far as they went were unreliable and taken under abnormal conditions. The explanation for this is that in 1902 the old régime of gradation which had been in use for at least seventeen years was completely changed and the commonly accepted twelve-year system put into operation. It is obvious that such a change produces abnormal conditions throughout the grades and that it will take at least three or four years before a new system can be applied effectively under anything like normal conditions.

The original plan, therefore, had to be abandoned. In its place was adopted a study of the school history of the pupils

enrolled in the eight elementary grades in October, 1908, for the three years 1906-1909.   This could not have been done without the liberal assistance given by the superintendent, supervisors, and teachers.

The sources of the data collected fall under three heads: (1) the school records; (2) the personal knowledge of the teachers, and (3) information furnished by the home through the child.   Among the former must be mentioned the record card given to the child upon entering school.   The data recorded on these since 1905 are very reliable, the form being shown in the following duplicate:

<center>PUBLIC SCHOOLS, READING, PA.</center>

Record of ....Born ....

Admitted to.................Building..............Grade..........

Date of admission.............. Date of vaccination.................

* Indicates transfer.

Date of Pro. or Trans.	To grade	Division	Building	Date of Pro. or Trans.	To grade	Division	Building
....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....

Owing to differences in recording the division and to lack of a clear distinction between division A and B in many of the grades, the data recorded under the division column had to be discarded.   The date of vaccination was also omitted, although in a few cases a child was kept out of school on account of not being vaccinated.

On the blanks returned the names of 6025 boys and 5736 girls were recorded as regularly enrolled pupils for the first three months.   Of these 5335 boys and 5130 girls, a total of 10,465 belonged to the public schools, and 690 boys and 606 girls to the parochial schools.   Classified according to grade they are as follows:

Table I.—Grade Distribution according to Blanks Returned from Both Public and Parochial Schools.

Grades	Public Schools			Parochial Schools		
	Boys	Girls	Total	Boys	Girls	Total
1	1,011	952	1,963	163	114	277
2	811	776	1,587	148	141	289
3	780	732	1,512	148	125	273
4	779	833	1,612	107	114	221
5	847	676	1,523	67	62	129
6	559	520	1,079	42	35	77
7	353	394	747	13	13	26
8	195	247	442	2	2	4
Totals	5,335	5,130	10,465	690	606	1,296

In the various computations a large number of these blanks had to be rejected for want of sufficient information, especially those of the parochial schools, from which not enough detailed information was received to warrant deductions. In addition to these all records of apparent or real abnormalities due to uncontrollable circumstances were also rejected in all computations which involved the merits of the educational system.

II.

Figures of Enrolment.

Since the appearance of "Elimination of Pupils from School" by Prof. Thorndike, much has been said and written concerning the relative value of figures of enrolment throughout the grades. No doubt in a number of cases the system of instruction has been unjustly criticised by not taking into consideration the kind of enrolment dealt with and neglecting to consider the uncontrollable factors which are the direct and indirect causes for a large per cent of retardation and apparent elimination found in the grades. School systems have been compared and placed in the scale of efficiency through computations based upon as many as five different sets of enrolment figures, each giving different results when applied to the same system. Such discrepancies have been notably pointed out by Falkner in an article published in *The Psychological Clinic,* May 15, 1908; and in the same journal for October 15, 1908, Ayres has pointed out the uncontrollable factors which must be considered in the discussion of retardation and elimination of pupils.

Another potent factor causing injustice and discrepancies in the comparison of school systems is the use of data recorded in different years. Many cities have made great advance during the last five years, and to base their efficiency upon the records of five years ago is at best a misrepresentation. Even in two years the enrolment in the same grade may vary considerably. For instance, the enrolment in the third grade in October, 1906, was 8.2 per cent more than in the second grade for the same year and in October, 1908, 3.9 per cent less, a total fluctuation of 12.1 per cent.

The enrolments found in the various school reports comprise four distinct classes of figures, *viz.,* total enrolment, average enrolment, average enrolment based on average attendance, and monthly enrolment. Another method employed is that of taking the enrolment on a certain day, but as this is essentially the same as the enrolment for the month in which it was taken, it need not be considered separately.

The total enrolment includes all pupils who belonged to school during the year regardless of the number of days they attended.

The average enrolment is obtained by dividing the sum of the monthly enrolments by the number of months in the school year.

The enrolment based on the average attendance is computed in essentially the same way as the average enrolment, but on the basis of the average attendance in each month. It is obviously always the lowest enrolment.

The monthly enrolment includes all those pupils which belonged to school during each particular month. Since the number admitted, the number eliminated, and the number promoted vary considerably for the different months, the monthly enrolments also vary greatly.

The question now is, which data of enrolment are the most reliable and of most value? With such a diverse set of data as these different enrolments represent, it is evident that erroneous deductions and unjust criticisms are inevitable, unless the *kind* of data of enrolment used is duly considered. Especially is this true when the efficiency of the school system is involved.

For instance, the total enrolment in the Reading public schools during 1907-1908 was 12,785, the average enrolment 11,686, the average attendance 10,278, and the monthly enrolment varied from 11,954 in October to 11,143 in June. Stated in terms of differences, the total enrolment was 831 higher than the monthly enrolment for October, the enrolment for October 268 higher than the average enrolment, the average enrolment 543 higher than the enrolment for June, and the June enrolment 865 higher than the enrolment based on the average attendance, a total difference between the highest and lowest enrolment of 2507.

For computations of retardation and elimination the total enrolment tends undoubtedly to exaggerate the former and minimize the latter. It includes in the first place all the transient class peculiar to our large cities, for whom the schools cannot be held responsible. In the second place the total enrolments are likely to contain duplicates due to moving, promotions, and transfers, of which there were in Reading 1230 in 1907-1908.

In dealing with the average enrolment we no doubt come nearer the normal condition of the schools, the enrolment being about the same as for the month of March. In computations comparing one school system with another, based upon figures of enrolment, the average enrolment is the most just, since it minimizes abnormal local fluctuations in school conditions. For local purposes, however, this becomes an objection, since it obscures essential knowledge concerning abnormalities with which the school authorities should be conversant.

The average enrolment based upon the average attendance is valuable in that when compared with the average enrolment it reveals in some measure the part that non-attendance plays as a factor in retardation, the extent of which is pointed out in *The Psychological Clinic,* Vol. III, No. 1, by Ayres, and in Vol. III, No. 4, by Mr. Ralph L. Johnson, Supervising Principal, Upper Darby, Pa. But for computations relative to grade distribution, elimination, etc., the enrolment based on the average attendance should not be used, since lack of attendance in some elementary schools is more than twice as high in the first three grades as in the upper five. This considerably minimizes the enrolment in the lower grades as compared with the upper grades.

Unquestionably the monthly enrolments are of the greatest value. Because of their diversities, they must be considered at some length. It is obvious that with a difference of over eight hundred between the highest and lowest monthly enrolment in a school population of approximately twelve thousand eight hundred, the computations based upon the October enrolment, let us say, will vary decidedly from those derived from the enrolment for June.

TABLE II.—ENROLMENT OF MALES AND FEMALES IN EACH GRADE OF THE PUBLIC SCHOOLS IN OCTOBER, 1907.

Grade	Male	Female	Total	Grade	Male	Female	Total
1	994	969	1,963	7	338	378	716
2	871	795	1,666	8	241	254	495
3	872	862	1,734	9	214	237	451
4	916	824	1,740	10	131	149	280
5	807	691	1,498	11	62	79	141
6	529	569	1,098	12	45	85	130
				Total	6,020	5,892	11,912

A study of the monthly enrolments for ten years showed the highest enrolment to be, on the average, for the month of October, although differing but little from that of November. In October, 1907, the enrolment was .2 per cent higher than in September, but from then on until June there was a gradual total decrease of 10 per cent in the elementary grades. As shown in table II there is also a decided difference between the number of males
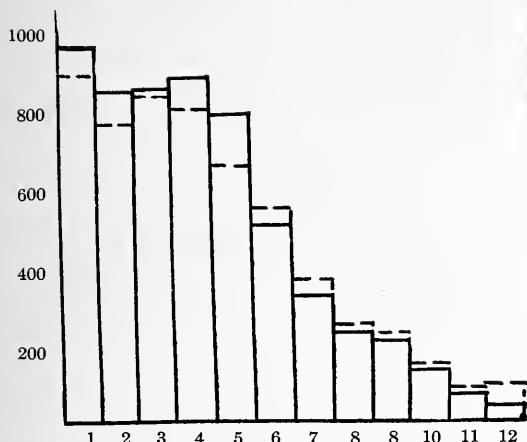
DIAGRAM 1. The approximate number of males and females
in each grade.

and females enrolled in grades two, four, and five, and in each of the first five grades the number of males exceeds the number of females, a total difference of 319. But in all grades above the fifth the number of females exceeds t h e number of males by a total of 191. Their approximate numerical relations are shown in diagram 1.

TABLE III.—CHANGES IN ENROLMENT FROM SEPTEMBER TO JUNE
DURING 1907-1908 IN THE FIRST FOUR GRADES. (THE
MINUS SIGN REPRESENTS A DECREASE.)

Sept. to Oct. ...	4.4 per cent		Sept. to March .	3.3 per cent	
Sept. to Nov ...	4.7	"	Sept. to April ..	— 2.1	"
Sept. to Dec ...	4.5	"	Sept. to May ...	— 4.6	"
Sept. to Jan ...	6.8	"	Sept. to June ..	— 8.9	"
Sept. to Feb ...	10.7	"			

Computing the percentages of change in monthly enrolment in each grade from September to June, 1907-1908, shows that the enrolment in the first four grades increases about 4 per cent in October, then remains constant until January, when there is another increase of about 2 per cent, followed by an increase of 4 per cent in February. From then on to the end of the year the enrolment decreases uninterruptedly 19.6 per cent. The February enrolment is by far the largest in these four grades. But taking the October enrolment, which was 4.4 per cent greater than in September, and which represents more nearly the normal condition in the first four grades, we have a total decrease of 13.3 per cent from October to June.

TABLE IV.—CHANGES IN ENROLMENT (PER CENT) FROM SEP-
TEMBER 1907, TO JUNE 1908, IN GRADES
FIVE, SIX, SEVEN AND EIGHT.

	Five	Six	Seven	Eight
Sept. to Oct....	—1.1	— .6	— .8	— .2
Sept. to Nov....	—1.1	— 2.1	— 2.2	— 2.3
Sept. to Dec....	—1.2	— 3.7	— 4.8	— 3.3
Sept. to Jan....	1.9	— 6.0	— 6.1	— 7.1
Sept. to Feb....	.9	— 7.4	— 7.7	— 7.1
Sept. to Mar....	— .6	—11.5	—10.8	— 7.7
Sept. to Apr....	—3.9	—14.2	—16.2	—14.0
Sept. to May....	—5.7	—16.6	—18.6	—17.3
Sept. to June...	—7.8	—19.7	—22.9	—19.3

Since midyear promotions are made only in the first five grades, the last grade to show their effect is the fifth. The enrolment increased approximately 2 per cent in January, but by June it had decreased to 7.8 per cent less than the September enrolment.

In grades six, seven, and eight there is an uninterrupted, total average decrease of 20.6 per cent from September to June. But the exodus of boys and girls in these grades is by far the largest in December and March. In the eighth grade from a total elimination of 19.3 per cent from September to June, approximately one-half left during the months of December and March. In the seventh grade, out of a total elimination of 22.9 per cent, one-third left during November and March; in the sixth grade, of the 19.7 per cent eliminated, one-fourth left during December and February; and in the fifth grade one-third of the eliminated left in March.

In order to give an approximate idea of the relative value of the different monthly enrolments, the enrolments for October, February, and June are compared schematically in diagram 2, based upon the deviations from the September enrolment. The zero line represents the enrolment in September, the enrolments for October, February, and June being represented respectively by the solid, broken, and dotted lines. The enrolments for these months were selected, because they represent the highest and lowest enrolments, and show the influence of midyear promotions.

It is at once apparent that with two exceptions the June enrolment in each of the eight elementary grades was consider-

ably less than in September and October. As stated above, it was 543 less than the October enrolment. The curves show that the enrolment in the first four grades changes but little during the year as compared with the decided decrease in the upper grades. Since elimination is greatest among the retarded, it is thus evident that the June enrolment minimizes retardation and exaggerates elimination in grades six to eight, just the reverse of the computations based upon the total enrolment.
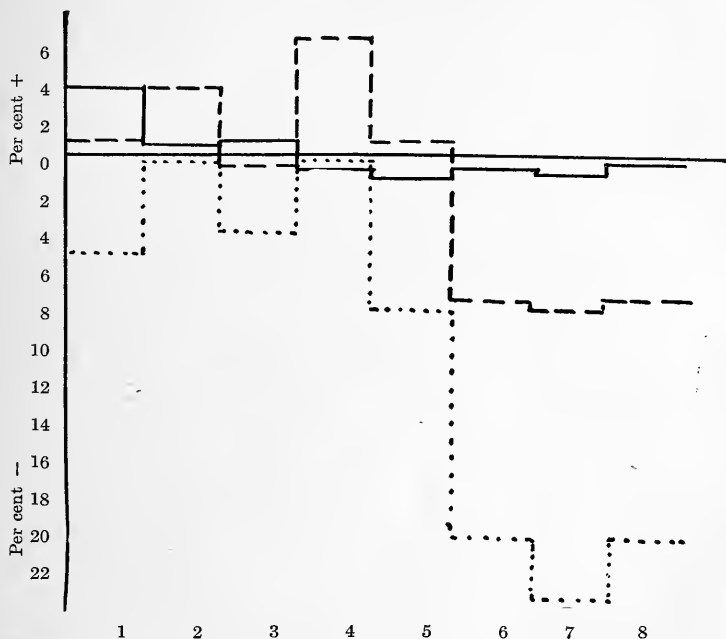
DIAGRAM 2. Relative value of October, February and June enrolments, based on deviation from September enrolment, represented respectively by the solid, broken, and dotted lines.

In February the enrolment in grades two, four, and five increased considerably, especially in grade four which had an increase of 119. This means a temporarily abnormal condition for these grades, but which by the end of the year may be at least partially overcome. On account of this added congestion in the lower grades, therefore, it is also not fair to take the February enrolment for comparison in a system of this kind, since it exaggerates the retardation in these grades. For grades six to eight, however, the February enrolment represents about the average condition and is a truer index of the average amount of retardation than the enrolment for October or November.

Everything considered as far as this investigation goes, the October or November enrolments are the fairest and most valuable. In the first place they can be obtained early in the year and therefore are of immediate use. Secondly, these enrolments represent the time of the year when the schools are more generally normal and less influenced by temporary local fluctuations. Thirdly, next to the total enrolment they represent the highest enrolment and at most the number of duplications is very small.

In Vol. II, No. 5, of *The Psychological Clinic,* Ayres in an article on "Some Factors affecting Grade Distribution," points out that the annual increase in the population is a factor in modifying grade distribution. He says: "If children enter at the age of seven they will be at least fourteen upon reaching the eighth grade, and we shall not be far out of the way if we state that under perfect school conditions of progress and retention of pupils we could in no case expect to find more than 87 per cent as many children in the eighth grade as in the first. This is a constant and very considerable factor in bringing about disparity in the number of the children in the several grades, and it is one which has been entirely overlooked in much of the current discussion of the problem." He finds that for every one thousand children in the first grade we can expect only 871 in the eighth grade under perfectly normal conditions, considering only the death rate and the increase in population as the factors causing this disparity. The effect of the increase in population alone upon the successive grades is given as 11, 28, 50, 64, 77, 88, and 102 per thousand, a total difference of 420 over the supposititious eight thousand that would be in the eight elementary grades if there were no elimination.

Probably this is a fair allowance under general conditions; but as Ayres says: "The age distribution of the population is not uniform throughout the country. In some localities in fact very considerable variations are found." The city of Reading apparently seems to be one of these exceptions. According to Ayres' computations, for every 1000 children in the first grade one year there should be 1011 the following year under the same conditions, 1028 the next year, 1050 the fourth, and in six years there should have been an increase of 77 or 7.7 per cent. Likewise the other grades should have increased proportionally.

Computing the percentages of change in each grade for the month of October from 1903 to 1908 reveals directly opposite results. During these six years the enrolment in the first grade

decreased 6.1 per cent, and in the second grade 4.9 per cent. Grades three and four increased respectively .8 per cent and 8.6 per cent, but the number in grades five and six again decreased 7 per cent and 23.7 per cent. Grades seven and eight, and the high school show the encouraging although abnormal increase of 3.5, 11.0, and 41.2 per cent.

TABLE V.—ENROLMENT IN THE ELEMENTARY GRADES IN OCTO-
BER FOR THE YEARS 1903 TO 1908.

	Public Schools	Parochial Schools	Total
1903	11,101	926	12,027
1904	10,999	1,230	12,228
1905	11,267	1,244	12,511
1906	10,995	1,398	12,393
1907	10,910	1,510	12,420
1908	10,687	1,454	12,141

The total enrolment for October in the elementary public schools, as shown in the above table, decreased 102 in 1904 and in 1905 increased 268. But during the last three years it again decreased 272, 85, and 223 respectively.

During these same years the enrolment in the parochial schools increased with but one exception, and in 1904 and 1906 rather decidedly, due to the opening of two additional schools. But in October, 1908, the enrolment decreased 56, as in the public schools.

Comparing the decided increase of 314 in the enrolment in the parochial schools in October, 1904, with the simultaneous decrease of only 102 in the public schools, it seems as though a considerable number of the 289 pupils enrolled at the opening of the Polish parochial school at this time were drawn from a source that little affected the enrolment in the public schools. It no doubt was a wise step and brought many into the school room who otherwise would have remained outside. On the contrary the opening of St. Joseph's parochial school in 1906 seems to have drawn its 167 pupils largely from those previously registered in the public schools, since in October of this same year there was the decided decrease of 272 in the latter.

To justify Ayres' deductions and to explain this abnormally large decrease in the elementary grades of the public schools during these years, it becomes necessary to find out, if possible, the cause for this diminution in the enrolment. Our first thought

would direct us to a possible change in the enrolment in the parochial schools. But even this does not account for the loss. As shown in table V*, the enrolment including both public and private schools increased 484 from 1903 to 1905, an average increase of 242. But from 1905 to 1908 the enrolment decreased 370, an average decrease of 123 for three years.

Further analysis of the percentages of change in the enrolment in each grade during 1903 to 1908 throws more light on this diminution. It reveals decided fluctuations not only in the enrolment in the same grade for the different years, but also between the numbers of boys and girls.

The average change in the enrolment in the first grade during these years shows that the number of boys decreased 4.6 per cent and the number of girls 7.5 per cent, an average decrease of 6.1 per cent. In the second grade there was an average decrease of 3.7 per cent in the number of boys and 6.2 per cent in the number of girls.

The average amount of change from 1903 to 1908 in grades three and four shows an increase of .8 per cent in the former and 8.6 per cent in the latter, and a marked difference between male and female. The number of boys in the fourth grade increased only .1 per cent, while the number of girls increased 17.2 per cent.

This increase took place in the years 1903 to 1906, and some of it is undoubtedly due to the regrading of the schools and a change in the course of study. But judging from the enrolments in grades one and two for October, 1903 and 1904, it looks as though the course of study or method of teaching in the first two grades were better adapted for the progress of the girl than the boy. Furthermore, the computation of the length of time spent in the respective grades during 1906 to 1908 partly verifies this deduction. Only 1.7 per cent of the boys as against 2.6 per cent of the girls completed the first grade in half a year; 45.2 per cent of the boys and 50.6 per cent of the girls completed it in one year; while 34 per cent of the boys and only 28.4 per cent of the girls were in the first grade two years and longer.

In grades five and six there were such decided fluctuations that definite deductions are unwarranted. Nevertheless two things are apparent, first the number of girls has considerably diminished while the number of boys has slightly increased. Taken as a

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*This does not include the enrolment in the German parochial school, it being impossible to obtain the enrolment for these years. But since the number enrolled does not exceed 75, the possible changes are almost negligibly small.

whole the enrolment in these grades has greatly decreased. One explanation for this is to be found in the effort to overcome the congestion in these grades due first to midyear promotions extending only up to the fifth grade, and secondly to recruits from the parochial schools. One of the parochial schools taught only the first four grades and another only the first five, but two years have since been added to the course of the former and one to the latter. Moreover, in October, 1906, there was an increase in the enrolment in the fifth grade of 2.3 per cent and in 1907 an increase of 2.7 per cent in the sixth grade, thus continuing the successive upward increase due to the regrading of the schools in 1902-1903.

Grades seven and eight varied even more than the two preceding grades in the number enrolled, the enrolment in the former having increased 3.5 per cent in these six years, and in the latter 11.0 per cent. During these same years the enrolment in both high schools increased with but one exception, in October, 1908, the enrolment in the Girls' High School was 7.6 per cent less than in the preceding year. Since 1903 the enrolment in the Boys' High School increased 55.4 per cent, and in the Girls' High School 27 per cent.

When these computations are considered as a whole, three things become evident: 1. The regrading of the schools and a change in the course of study caused abnormally large fluctuations throughout the grades, but obviously for the better. 2. There has been a successive upward increase in the enrolment from the lower to the upper grades from 1903 to 1908. 3. The boys on the average lost more time in the lower grades than the girls.

In the second deduction we have found at least one factor which contributed toward the diminution of the enrolment in the elementary grades during the last three years. This is more clearly shown in a further comparison of the monthly enrolment for October with the average enrolment for these years. In October, 1907, the enrolment was 6.6 per cent greater than the average enrolment for the year. In October, 1906, it was only 5.1 per cent greater; in 1905, 4 per cent greater; in 1904, 3.6 per cent greater; and in 1903 only .7 per cent greater. In other words, since 1903 the difference between the monthly enrolment for October and the average yearly enrolment has been gradually increasing, a total change of 5.9 per cent.

What is the explanation for this increase in the difference

between the enrolments under question, and has it reached its maximum? No doubt the main explanation for this change is found in the coöperation of two forces, one psychical, influencing parent and child alike, and the other in the regrading of the schools and the course of study. In 1902-1903, when the public elementary schools were regraded and the course of study completely changed, the whole city was stirred to an enthusiasm for education and a more general appreciation of the opportunities offered by the public schools. This accounts for the unusual similarity between the enrolment in October, 1903, and the average enrolment for that year. It means that there was such a general local revival of interest in learning as to produce abnormal conditions, quite obviously for the better, which are still being felt, although in a lessened degree. Whether or not the normal has been reached, or whether the difference will continue to increase, the statistics of the next few years will tell.

School Census.

In compiling the school census various assumptions in regard to an age standard are possible, each one giving different results. It is obvious that if we call a child six years of age during the lapse of time from its sixth to its seventh birthday we obtain results quite different from those calculated on a basis of five years ten months to six years nine months.

This may in part explain the marked discrepancy between the census of the Reading public schools taken on December 1, 1908, and the school census shown in table VI, taken from the blanks. Since the total enrolment in the elementary grades, according to this former census, was 1500 less than the actual enrolment in these grades in November, it is evident that decided omissions have been made. A further comparison of these two tables shows that all the pupils under six years were either omitted, or were called six years old. The latter method seems to have been pursued by some teachers, as shown by the fact that in a number of cases on the blanks handed in, a child five years old upon entrance was called six years of age for two successive years.

TABLE VI.—School Census taken from Blanks.

Grade	5 M	5 F	6 M	6 F	7 M	7 F	8 M	8 F	9 M	9 F	10 M	10 F	11 M	11 F	12 M	12 F	13 M	13 F	14 M	14 F	15 M	15 F	16 M	16 F	17 M	17 F	18 M	18 F	Tot. M	Tot. F	Total
1	58	60	465	472	225	278	89	86	26	22	6	11	5	3	5			2											879	934	1,813
2			25	35	236	322	264	268	148	85	70	35	34	19	9	4	5	1	1	1									792	770	1,562
3					18	33	237	253	239	215	145	125	67	50	42	30	14	8	5		1	2							768	714	1,482
4							32	42	179	200	211	242	203	188	119	100	60	25	7	6	2	3							814	810	1,624
5							1	2	27	37	165	186	200	178	198	162	140	76	40	12	3	3							774	656	1,430
6									3	2	34	45	129	142	178	162	128	108	48	46	19	9							539	508	1,047
7											5	8	31	42	109	141	118	131	55	58	23		3	2					344	391	735
8												2	3	6	27	44	65	91	63	80	25	32	8	16	1		1		193	271	464
Totals	58	60	490	507	480	638	623	651	622	561	636	654	672	628	687	643	530	442	219	203	73	49	11	18	1		1		5,103	5,054	10,157
" M. & F.	118		997		1,118		1,274		1,183		1,290		1,300		1,330		972		422		122		29		1		1		10,157		
Total ab. normal							89	86	174	107	221	171	309	260	373	296	347	220	156	123	73	49	11	18	1		1		1,755	1,330	3,085
" M. & F.							175		281		392		569		669		567		279		122		29		1		1		3,085		
Total normal			465	472	461	600	501	521	418	415	376	428	329	320	287	303	183	222	63	80									3,083	3,361	6,444
" M. & F.			937		1,061		1,022		833		804		649		590		405		143										6,444		
Total bel. normal	58	60	25	35	19	38	33	44	30	39	39	55	34	48	27	44													265	363	628
" M. & F.	118		60		57		77		69		94		82		71														628		

The average stand-
ard is on the basis
of six years ten
months to seven years
nine months for the
seven year old child,
s e v e n years ten
months to eight years
nine months for the
eight year old child,
and so on. In table
VI and diagram 3 the
same standard is as-
sumed.

Grade		Per cent
1		17.9
2		15.4
3		14.6
4		16.0
5		14.1
6		10.3
7		7.2
8		4.6

DIAGRAM 3.   Distribution of 10,157 pupils accord-
ing to grade.

Of the 10,465
names of pupils re-
corded on the blanks
r e t u r n e d by the
teachers of the public
schools, 308 had to
be omitted for want
of sufficient data to
compute the exact
age in years and
months, leaving a to-
tal of 10,157. The
age distribution of
these children is shown in the following table (VII) and dia-
gram (4).

TABLE VII.—DISTRIBUTION ACCORDING TO AGE.

Age	Number	Per cent	Age	Number	Per cent
5	118	1.2	13	972	9.5
6	997	9.8	14	422	4.1
7	1,118	11.0	15	122	1.2
8	1,274	12.6	16	29	0.3
9	1,183	11.6	17	1	.005
10	1,290	12.7	18	1	.005
11	1,300	12.8			
12	1,330	13.1	Totals	10,157	100.00

The ages varied from five to eighteen years. One hundred
and eighteen entered at five years of age, which is approximately
the same number as those fifteen years of age. The number six
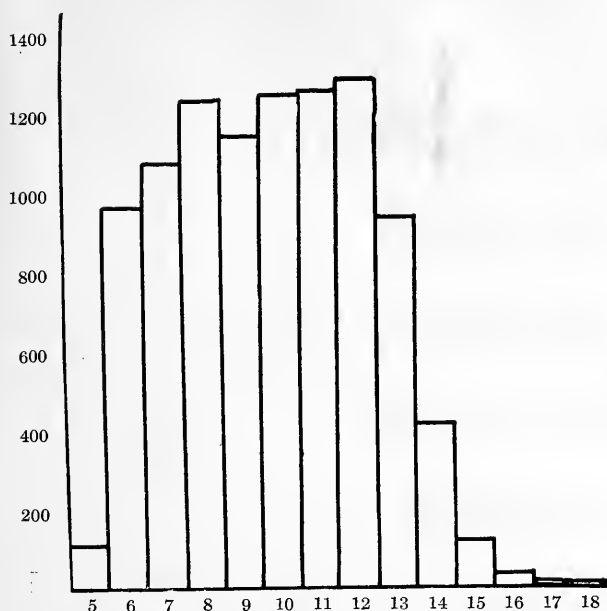
DIAGRAM 4.   Distribution of 10,157 pupils according to age.

years of age and the number thirteen years of age also approxi-
mate each other.   The same is true of the ages eight, nine, ten,
eleven, and twelve, the highest number enrolled being twelve years
of age.   The diminution of 3.6 per cent from the twelve year
olds to the thirteen year olds is undoubtedly due to a number
leaving school at the age of twelve.   Even if we assume that all
the children twelve years old and less in the eighth grade enter
the high schools, we still have a reduction of approximately 2.5
per cent.

Since the thirteen year olds are scattered throughout the
grades and the fourteen year olds in all but the first grade, the
great amount of elimination at these ages is not shown in a table
or diagram based upon the distribution by grade.   But in dia-
gram 4 which shows the relative number and distribution on the
age basis, the great efflux at the ages of thirteen and fourteen
is clearly demonstrated.   From the twelve year olds to the four-
teen year olds there is a diminution of 358 and from the thirteen
year olds to the fourteen year olds a reduction of 550.   Deduct-
ing from these numbers 156 who are thirteen years of age and 143
fourteen years of age in the eighth grade, minus the average per
cent of those who are eliminated in this grade, and assuming the
remainder to enter the High School, we have approximately 215
who leave school at the age of thirteen years and 430 at the age
of fourteen.

III.

Retardation.

In the *World's Work* for May, 1909, Mr. James P. Monroe in the first of a series of articles on educational problems submits the following table:

Schools	No. of Students	Pctg. of Total No. of Students	Pctg. of Total Population
Elementary public	16,069,305	86.45	18.4
Elementary private	1,304,547	7.02	1.4
Secondary high, public....	771,687	4.15	.88
Secondary prep., private..	190,099	1.02	.21
Universities and colleges..	149,700	.805	.17
Technological schools.....	33,700	.18	.03
Professional schools......	63,256	.34	.07
Totals..............	18,582,294	99.965	21.16

A mere glance at the table shows that the commonly used phrase "popular education" is certainly a misnomer. With an enrolment of only 4 per cent in the public high schools as compared with an enrolment of 86 per cent in the elementary schools, the need of research along this line becomes at once apparent. But even this does not show the real facts in the case, since it deals only with general problems. They are not detailed enough to be of real constructive value in the elementary grades, where elimination prevails in all our large cities. At the root of elimination is the kindred problem of retardation, which means that the children concerned are above normal age for their grade.

That these two factors are coöperative is shown by the fact that of the 48 per cent of boys and girls who left the fifth and sixth grades to go to work, nearly one-half (49 per cent) repeated from one to two years, and nearly one-sixth (about 15 per cent)

repeated three years, as over against the 3 per cent who continued to the eighth grade.

The question of what constitutes "normal age" for the different grades has been variously fixed from six to nine years for the first grade, but whatever the basis, the selection must be more or less arbitrary. The consensus of opinion, however, seems to be that all pupils of the first grade under eight years of age are of normal age; above that age they are retarded. This is a fair assumption, because comparatively few enter the first grade at eight years of age or over, and relatively many enter the first grade at the age of seven. But it seems that there ought to be not only a maximum age standard for the normal children in the different grades, but also a minimum, thus dividing the pupils into three classes, the retarded, or those above normal age for the grade, those of normal age, and those below normal age.

In this treatise, therefore, all pupils eight years of age and over in the first grade, nine years and over in the third, and so on, are called retarded. All pupils between the ages six and seven in the first grade, seven and eight in the second, and so on, are classed as of normal age. All pupils below six years in the first grade, below seven years in the second, and so on, are classed as below normal age.

The progress of the two sexes throughout the grades seems to be unequal. The boys gradually fall behind. Although only 1.6 per cent more of the boys than of the girls of the first grade are retarded, by the time the eighth grade is completed there is a total difference of 8.1 per cent. The same is true in regard to the number of pupils of normal age, with but one exception,—in the eighth grade the number of boys of normal age is 3.2 per cent greater than the number of girls. This is due to the fact that more of the retarded girls fourteen years and over continue to the eighth grade than of the boys.

The proof of this is demonstrated by a comparison of the number of boys and girls retarded in grades five, seven, and eight. From a difference of 10.7 per cent in the fifth grade, there remains a difference of only 6.0 per cent in the seventh, and only 1.0 per cent in the eighth.

TABLE VIII.—PUPILS ABOVE NORMAL AGE IN EACH GRADE.

Grade	Number			Per cent		
	M.	F.	Total	M.	F.	Average
1	131	124	255	14.9	13.3	14.1
2	267	145	412	33.7	18.8	26.3
3	274	213	487	35.7	29.8	32.8
4	391	321	712	48.0	39.6	43.8
5	381	253	634	49.4	38.7	44.1
6	195	157	352	36.2	30.9	33.6
7	81	69	150	23.5	17.5	20.5
8	35	48	83	18.1	17.1	17.9
Totals	1735	1330	3085	34.4	26.3	30.4

TABLE IX.—PUPILS OF NORMAL AGE IN EACH GRADE.

Grade	Number			Per cent		
	M.	F.	Total	M.	F.	Average
1	690	750	1440	78.5	80.3	79.2
2	500	590	1090	63.2	76.6	69.9
3	476	468	944	61.9	65.6	63.8
4	390	442	832	47.9	54.6	51.3
5	365	364	729	47.2	55.4	51.3
6	307	304	611	57.0	59.8	58.4
7	227	272	499	66.0	69.6	67.8
8	128	171	299	66.3	63.1	64.7
Totals	3083	3361	6444	60.4	66.5	63.5

TABLE X.—PUPILS BELOW NORMAL AGE IN EACH GRADE.

Grade	Number			Per cent		
	M.	F.	Total	M.	F.	Average
1	58	60	118	6.6	6.4	6.5
2	25	35	60	3.1	4.6	3.9
3	18	33	51	2.4	4.6	3.5
4	33	47	80	4.1	5.8	4.9
5	28	39	67	3.6	5.9	4.8
6	37	47	84	6.8	9.3	8.1
7	36	50	86	10.5	12.9	11.7
8	30	52	82	15.6	19.2	17.4
Total	265	363	628	5.2	7.2	6.2
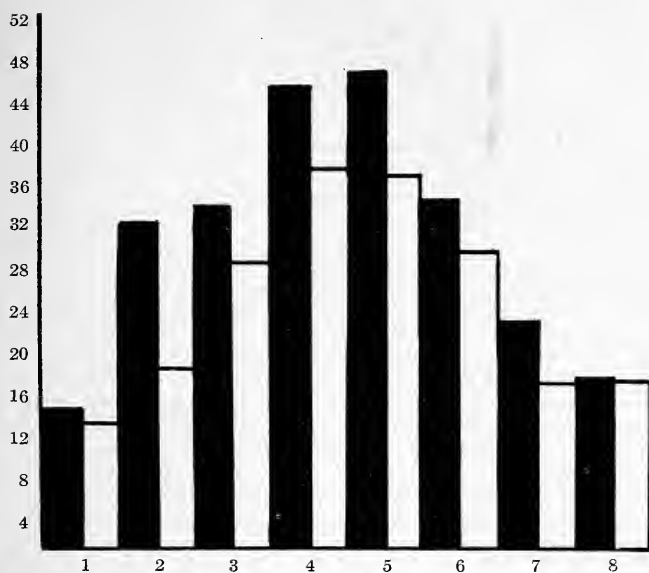
DIAGRAM 5. Per cent of male (black bars) and female (white bars) retarded in each grade.
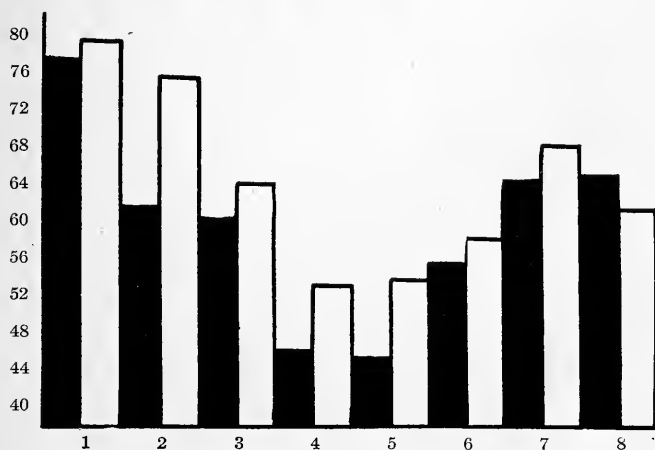
DIAGRAM 6. Per cent of male and female of normal age in each grade.
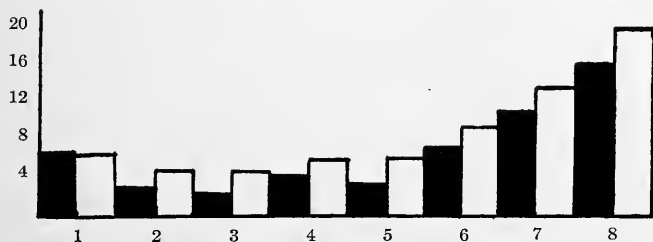
DIAGRAM 7. Per cent of male and female below normal age in each grade.

The variations between boys and girls are shown more for-
cibly in diagram 5.   Besides showing the relative inequality
between the number of boys retarded and the number of girls
retarded, the curves show that the retardation among the boys
increases steadily to the end of the fifth grade, and among the
girls only to the end of the fourth grade.   In other words, the per-
ceptible elimination among the girls begins in grade five and
among the boys in grade six.   Furthermore, since more of the
retarded girls fourteen years of age and over continue to the
eighth grade than of the boys, the curves in the eighth grade almost
coincide.

Diagram 6 shows the relative number of boys and girls of
normal age in each grade.   The curves with but one exception
are just the reverse of the curves in the previous diagram, being
but slightly influenced by the comparatively few below normal
age represented in diagram 7.   The most perceptible influence
is in the eighth grade, where the number below normal age, com-
pared with the total enrolment in this grade, reaches its maximum.
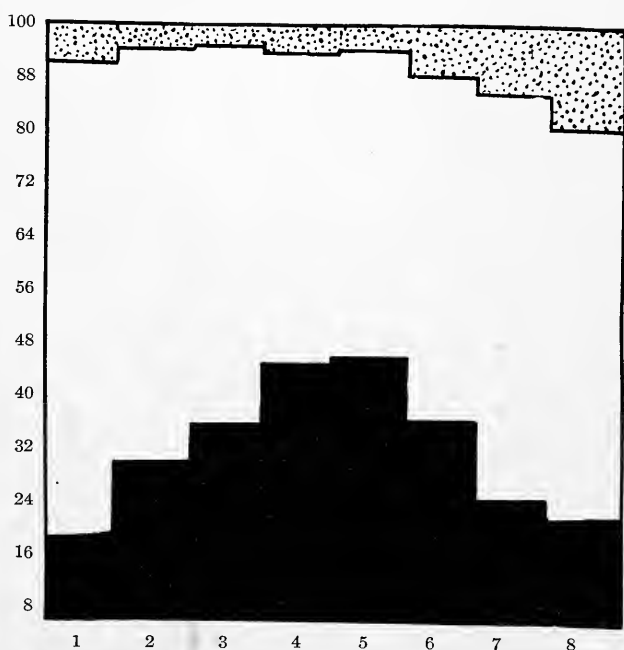
DIAGRAM 8.   Per cent of pupils of normal age (white), above normal
(black), and below normal (dotted) in each grade.

Disregarding sex differences, and representing the total enrol-
ment in the elementary grades by means of a square as shown

in diagram 8, the relative numbers of the three groups of pupils are shown for each grade. Finally disregarding also the grades the relative number in each group is shown in diagram 9.

DIAGRAM 9. Relative number of pupils of normal age, above normal and below normal.

Reconstructing tables VIII, IX and X on the basis of age instead of grade, we obtain the three following tables (XI, XII and XIII). As stated above, the five year olds are all classed as below normal age. From the ages six to ten, the per cent of those below normal rises and falls in alternate years, ranging from 4.8 per cent for the seven year olds to 7.2 per cent for the ten year olds, the maximum number of those below normal. For the ages eleven and twelve there is again a gradual decrease. The totals show 2 per cent more girls than boys below normal.

TABLE XI.—PUPILS BELOW NORMAL AGE (ON BASIS OF AGE).

Age	Number			Per cent		
	M.	F.	Total	M.	F.	Average
5	58	60	118	100.0	100.0	100.0
6	25	35	60	5.1	6.9	6.0
7	19	38	57	3.9	5.8	4.8
8	33	44	77	5.3	6.7	6.0
9	30	39	69	4.8	6.9	5.8
10	39	55	94	6.1	8.4	7.2
11	34	48	82	5.1	7.6	6.3
12	27	44	71	3.9	6.8	5.3
Totals	265	363	628	5.2	7.2	6.2

As shown in table XII there is a slight increase in the per cent of normal age pupils from the six year olds to the seven year olds for both male and female, but from then on the numbers decrease rather decidedly and uninterruptedly to the fourteen years olds, of whom only 34.1 per cent are of normal age. The average

decrease for the nine years is 7.5 per cent.   The 50 per cent mark is crossed at the age of eleven.

TABLE XII.—PUPILS OF NORMAL AGE (ON BASIS OF AGE).

Age	Number			Per cent		
	M.	F.	Total	M.	F.	Average
6	465	472	937	94.9	93.1	94.0
7	461	600	1061	96.1	94.2	95.2
8	501	521	1022	80.4	80.1	80.3
9	418	415	833	67.2	74.1	70.7
10	376	428	804	59.2	65.4	62.3
11	329	320	649	48.9	51.0	50.0
12	287	303	590	41.8	47.2	44.5
13	183	222	405	34.5	50.2	42.3
14	63	80	143	28.8	39.4	34.1
Totals	3083	3361	6444	60.4	66.5	63.5
				Average decrease		7.5

TABLE XIII.—PUPILS ABOVE NORMAL AGE (ON BASIS OF AGE).

Age	Number			Per cent		
	M.	F.	Total	M.	F.	Average
8	89	86	175	14.3	13.2	13.7
9	174	107	281	28.0	19.0	23.5
10	221	171	392	34.7	26.2	30.5
11	309	260	569	46.0	41.4	43.7
12	373	296	669	54.3	46.0	50.2
13	347	220	567	65.5	49.8	57.7
14	156	123	279	71.2	60.6	65.9
15	73	49	122	100.0	100.0	100.0
16	11	18	29	100.0	100.0	100.0
17	1	0	1	100.0	100.0	100.0
18	1	0	1	100.0	100.0	100.0
Totals	1755	1330	3085	34.4	26.3	30.4
				Average decrease		8.7

As might be expected, the number and per cent of the pupils above normal age form an increasing series.   Beginning with 13.7 per cent for the eight year olds, they increase to 65.9 per cent for the fourteen year olds, an approximate increase of five times the number in six years.   All children fifteen years of age and over are classed as over age.   The average per cent of increase from eight to fourteen years is 8.7 per cent.

Average Time Spent in Grade.

Probably the most significant and helpful of the tables is table XIV showing the average time spent in the elementary grades one to eight. In the computation of this table only the complete records of those born in this country were taken. The results obtained are those of native born children, placed under four headings,—first those who completed the grade in a half year; secondly those who completed the grade in one year; thirdly those who completed the grade in a year and a half; and fourthly those who spent two years and over in the grade.

Table XIV.—Average Time Spent in Each of the Eight Elementary Grades.

Per cent of pupils enrolled who completed the grade in

Grade	½ year M.	F.	A.	1 year M.	F.	A.	1½ years M.	F.	A.	2 years and over M.	F.	A.
1	1.7	2.6	2.1	45.2	50.6	47.8	19.2	19.7	19.4	34.0	28.4	31.1
2	1.6	1.6	1.6	67.4	68.2	67.8	12.1	9.6	10.8	19.7	20.5	20.1
3	2.0	2.0	2.0	59.4	59.5	59.5	11.4	12.7	12.1	27.2	25.8	26.5
4	5.9	2.8	4.3	60.4	62.6	60.8	9.3	12.2	11.8	24.3	22.4	23.1
5	2.2	4.0	3.1	66.7	68.2	67.4	5.7	6.4	6.1	25.0	21.5	23.2
6	.3	.6	.5	83.5	89.4	86.4		.28	.14	16.1	9.8	12.9
7		.4	.2	95.1	91.4	93.3				4.9	7.7	6.3
8				94.3	95.7	95.0				5.7	4.3	5.0
Av.	1.7	1.7	1.7	71.5	73.1	72.3	7.2	7.6	7.4	19.6	17.5	81.6

A mere glance at the table shows that the once current belief that the number who gain time is approximately equal to the number who lose time, or the average time gained is approximately equal to the average time lost, is not based on fact.

In grade one only 2 per cent completed the grade in a half year, as over against 31 per cent who spent two years and over in this grade. Adding to this number the 19.4 per cent who lost a half year, we have 50.5 per cent who lost time and only 2 per cent who gained time, leaving 47.8 per cent who completed the grade in the allotted time of one year. In the second grade there is a decided improvement, but even here 30.9 per cent lost time as compared with 1.6 per cent who gained a half year.

In grade three the number losing again increases, 12 per cent having lost a half year and 26.5 per cent one year and over. Only 59.5 per cent completed the grade in one year, 8.3 per cent less than in the second grade. In the fourth and fifth grades the number gaining a half year increased respectively to 4.3 per cent

and 3.1 per cent. The total number losing diminished to 34.9 per cent and 29.3 per cent, leaving 60.8 per cent who completed the fourth grade in one year, and 67.4 per cent, the fifth grade.

Since midyear promotions extend only to the fifth grade, a gain in time in grades six, seven, and eight is exceptional. In these three grades the numbers losing one year and more are respectively 12.9 per cent, 6.3 per cent, and 5 per cent, leaving 86.4 per cent who completed the sixth grade in one year, 93.3 per cent the seventh, and 95 per cent the eighth.

On the average only 1.7 per cent in the elementary grades gain a half year, and this gain is confined almost exclusively to the first five grades; 72.3 per cent complete the grade in one year; 7.4 per cent lose one-half year and 18.6 per cent lose one year or over. This means that on the average at least 26 per cent of those enrolled in the elementary grades are repeaters, of whom approximately 7 per cent lose a half year.

The table also shows decided variations between boys and girls. In grade one only 45 per cent of the boys completed the grade in one year, and 50 per cent of the girls; 34 per cent of the boys and only 28 per cent of the girls spent two years or more in grade one. In the second and third grades the progress was approximately equal, but in grades four and five about 2 per cent more of the girls completed the grade in one year. In grade four 2 per cent, and in grade five nearly 4 per cent more of the boys lost one year or more. Again in grade six nearly 6 per cent more of the girls completed the grade in one year. The seventh grade is the only one in which more boys than girls progressed normally. Ninety-five per cent of the boys and only 91 per cent of the girls completed the grade in one year, and in the eighth grade the progress was again approximately equal.

On the average in the elementary grades nearly 2 per cent more of the girls completed the grade in one year, and 2 per cent more of the boys spent two years or more in the same grade. Grades one, four, five, and six seem to be better adapted for the progress of the girl than the boy.

Closely allied to the table discussed is table XV, showing the per cent of actual gain and loss in each grade. As noted above only 2 per cent in the first grade gained time by com-

TABLE XV.—PER CENTS OF THOSE WHO GAINED TIME, MADE NORMAL PROGRESS, AND LOST TIME IN EACH GRADE, IN HALF YEARS.

		1st			2d			3d			4th			5th			6th			7th			8th		
		M.	F.	Av.	M.	F.	Av.	M.	F.	Av.	M.	F.	Av.	M.	F.	Av.	M.	F.	Av.	M.	F.	Av.	M.	F.	Av.
Gain	2																.27		.14					1.0	.9
	1½													.4	.5	.4	1.1	1.0	1.05	.4	1.4	.9	7	1.5	.8
	1							.5	.7	.6	.5	1.6	1.1	2.3	3.2	2.8	6.3	5.3	6.3	1.3	1.7	1.5	12.1	12.8	12.4
	½	1.7	2.6	2.2	2.5	2.9	2.7	6.1	3.0	4.5	5.6	4.0	4.8	3.9	6.8	5.4	3.8	6.6	5.2	5.6	8.3	6.9	4.3	2.5	3.4
Normal	0	45.2	50.5	47.9	31.1	38.6	34.9	25.1	29.2	27.2	19.2	19.7	19.5	17.4	25.2	21.3	25.5	28.1	25.3	26.7	33.6	30.2	30.5	37.4	33.9
Loss	½	19.2	19.8	19.5	11.0	12.8	11.9	9.3	9.5	9.4	6.6	9.7	8.2	5.9	6.1	6.0	6.0	4.9	5.5	6.8	4.8	5.8	6.4	2.0	4.2
	1	21.7	21.2	21.5	29.4	30.7	30.1	23.3	27.0	25.2	23.1	26.6	24.9	24.6	23.5	24.0	32.8	29.4	31.1	33.2	27.5	30.3	28.4	24.1	26.2
	1½	5.6	2.4	4.0	6.7	4.5	5.6	8.2	6.1	7.7	7.4	6.6	7.0	4.1	5.1	4.6	4.1	4.9	4.5	3.4	4.1	3.8	2.8	7.7	5.3
	2	4.0	2.4	3.2	10.6	6.6	8.6	16.1	13.6	14.9	20.2	15.4	17.8	23.8	19.7	21.7	16.3	13.2	14.7	12.9	13.1	13.0	7.8	9.2	8.5
	2½	.6	.4	.5	2.7	1.0	1.9	2.0	2.6	2.3	4.5	4.3	4.4	2.3	1.5	1.9	1.6	1.0	1.3	.9	1.0	1.0	.7	1.5	.6
	3	1.3	.3	.8	4.1	1.8	2.5	4.6	4.0	4.3	8.4	9.0	8.7	10.2	7.2	8.7	5.7	3.6	4.7	4.7	1.0	2.9	3.5		2.5
	3½	.1	.3	.2	.8	.6	.7	1.1	.3	.7	1.0	.7	.9	1.4	.5	.9	.3	.3	.3	.4	.3	.4	.71		.36
	4	.4		.2	.8	.4	.6	2.9	3.0	3.0	2.2	1.8	2.0	3.2	.6	1.9	1.1	1.7	1.4	.4	.3	.4	1.4		.7
	4½	.3		.2	.3		.2	.3	.3	.3	.34		.17	.36		.18									
	5					.2	.1	.5	.5	.5		.4	.2		.22	.11							7		35
	5½				.2		.1					.15	.08												
	6				.2		.1																		

pleting the grade in a half year, 48 per cent completed the grade in the normal time of one year, leaving just about half the class who lost from one-half to four and a half years. Nineteen per cent lost a half year, 21 per cent lost one year, and 4 per cent one and a half years, leaving 5 per cent who lost two years and over in this grade. In actual numbers, we find 28 boys and 16 girls, who were in grade one three years; 4 boys and 3 girls three years and a half, 12 boys and 4 girls four years, one boy five years, and two boys five and a half years,—enough pupils for four special classes.

Of the second grade pupils 2.7 per cent had gained a half year, and 35 per cent made normal progress. This added to the number who gained, leaves 62 per cent who lost from one-half to six years in the first two grades. Of these 12 per cent had lost a half year, 30 per cent one year, and 6 per cent one and a half years. The balance 15 per cent had lost from two to six years, and 5 per cent from three to six years, *i.e.* 46 boys had lost from three to six years, and 22 girls from three to five years. Six boys and three girls had lost four years, two boys four and a half years, one girl five years, one boy five and a half years, and one boy six years, a total of 68 pupils in the second grade who needed special attention.

In the third grade 5 per cent had gained time, .6 per cent gaining a whole year. Only 27 per cent had made normal progress and 68 per cent had lost from one-half to five years. Fifty-seven per cent had lost one year and over, 26 per cent two years and over, 9 per cent three years and over, and 4 per cent four years and over. Thirty-seven boys and 26 girls had lost from three to three and a half years, and 24 boys and 23 girls from four to five years, a total of 61 boys and 49 girls who had lost three years and over.

The number retarded reaches its maximum in the fourth grade. Of the pupils enrolled in this grade 5 per cent had gained a half year in the first three grades and one per cent one year. Only 19 per cent had gone normally through the grades, leaving 75 per cent who lost from one-half to five and a half years. Sixty-seven per cent had lost one year and over, 35 per cent two years and over, and 12 per cent three years and over. In actual numbers, we find 57 boys and 66 girls who lost from three to three and a half years, 15 boys and 12 girls from four to four and a half, and 4 girls five to five and a half years, a total of 72 boys and 82 girls, who spent on the average two years or more in their respective grades.

Since most of the greatly retarded do not get beyond the fourth grade, the fifth grade shows the beginning of improved conditions. By the time this grade is reached approximately 23 per cent have been eliminated, obviously representing the greatly retarded, very few of whom will receive further training other than in the school of experience. This does not mean that retardation stops here. There are some fond parents who in spite of the slow progress of their children keep on sending them even after the age limit of legally permissible withdrawal has been passed. One girl in the fifth grade had lost five and a half years, having attended school for ten and a half years, and still kept on coming although five years above the average age of the grade. The same is true of two boys in this grade, who had lost four and a half years; 18 boys and 3 girls had lost four years, 8 boys and 2 girls three and a half years, and 57 boys and 23 girls three years, a total of 83 boys and 28 girls who had lost three years and over, most of whom are above fourteen years of age. Twenty-one per cent had progressed normally and 8.4 per cent had gained time.

In grade six the improved conditions continue. Thirteen per cent had gained from one-half to two years and 25 per cent had made normal progress. Retardation, however, still makes its claim, although to a much less degree. Thirty-one per cent had lost one year, 15 per cent two years, and only 6 per cent three years and over,—a little more than half as many as in the fifth grade. Twenty-one boys and 11 girls had lost three · years, one boy and one girl three and a half years, and 4 boys and 5 girls four years.

Of the seventh grade 12 per cent had gained from one-half to two years, and 30 per cent had progressed normally. Approximately the same number as in the preceding grade, 30 per cent, had lost one year, but only 13 per cent had lost two years, and 3.7 per cent from three to four years. About 13 per cent of those retarded two years and over, and 6 per cent of those retarded three years and over, will therefore be eliminated in the sixth grade. Eleven boys and three girls had lost three years, one boy and one girl three and a half years, and one boy and one girl four years, a total of 13 boys and 5 girls who had lost from three to four years.

In the eighth grade the number who gained time increases to 17 per cent and those who progressed normally to 34 per cent. The number who had lost only one year decreases to 26 per cent,

and those who had lost two years to 8 per cent. Two boys had lost four years, one boy three and a half years, and five boys and three girls three years, a total of eight boys and three girls who had lost three years and over.

Summing up the losses and gains of the 4273 boys and 4195 girls included in this discussion, we have 229 boys and 262 girls who gained from one-half to two years, 1380 boys and 1555 girls made normal progress, and 2664 boys and 2378 girls lost from one-half to six years. Of the latter 78 boys and 53 girls lost four years and over, and 331 boys and 224 girls lost three years and over. In other words, 5.8 per cent of those enrolled in the elementary grades gained time, 34.7 per cent made normal progress, and 59.5 per cent lost time, of whom 1.8 per cent lost four years and over, and 6.8 per cent three years and over. One per cent more of the number of girls gained time and 5 per cent more made normal progress, an excess in loss of 6 per cent for the boys.

The actual periods gained and lost are shown in terms in tables XVI, XVII, and XVIII. Of the 4262 boys included in the table, 228 gained from one to four terms, 1380 made normal progress, and 2654 lost from one to twelve terms. In other words, out of every one hundred boys enrolled in the elementary grades 5 gained time, 33 made normal progress, and 62 lost time. Of the 4195 girls, 262 gained from one to four terms, 1555 made normal progress, and 2378 lost from one to eleven terms, *i.e.*, 6 in every one hundred gained time, 37 made normal progress, and 57 lost time. Thus for every one hundred boys and girls enrolled in the elementary grades, one more of the girls gained time, four more made normal progress, and five less lost time.

As shown in table XIX, of the 8457 boys and girls, 490 or 5.8 per cent gained time, 2935 or 34.3 per cent made normal progress, and 5032 or 59.5 per cent lost time. Out of every one hundred pupils enrolled approximately 6 gained time, 35 made normal progress, and 59 lost time, the amount varying from one to twelve terms. The loss sustained in any one year is less than half the number of pupils who have lost a term or more at some time during their school life. As previously stated, only about 26 per cent fail of promotion in any one year, *i.e.* lose time, as over against 59 per cent based upon the school history.

Thus far we have dealt only with the *number of pupils* who gained time, made normal progress, and lost time. Finding now the number of terms attended or at least belonged by these pupils, we obtain the following table:

TABLE XVI.—The School Progress of the Males in Each Grade by Terms.

Grade	No. in grade	No. who gained	Gained 4	3	2	1	Normal 0	Lost 1	2	3	4	5	6	7	8	9	10	11	12	Total who Lost
1	989	12				12	589	99	235	11	33	7	8	6	6	1				388
2	729	18				18	227	80	212	49	77	20	30	7	19	2				484
3	656	43			3	40	165	61	153	54	106	13	30	6	13	2	3			448
4	590	36			3	33	114	39	137	44	121	27	51	8	18	2				440
5	558	37		2	13	22	97	33	137	23	133	13	57	1	4					424
6	368	35	1	4	16	14	83	22	121	15	60	6	21	1	1		1	1		250
7	231	23	1	3	13	6	62	16	77	8	30	2	11	1	2					146
8	141	24	1		17	6	43	9	40	4	11	1	5						1	74
Totals	4262	228	3	9	65	151	1380	359	1112	208	571	83	213	30	63	9	4	1	1	2654

TABLE XVII.—The School Progress of the Females in Each Grade by Terms.

Grade	No. in grade	No. who gained	Gained 4	3	2	1	Normal 0	Lost 1	2	3	4	5	6	7	8	9	10	11	Total who Lost
1	935	18				18	593	79	197	10	30	1	6	1					324
2	717	21				21	277	92	220	32	47	7	13	4					419
3	603	22			4	18	177	57	163	37	82	16	24	2					404
4	679	38			11	27	133	66	181	45	105	29	61	5	3	2	1		508
5	472	49		2	15	32	119	29	111	24	93	7	34	2	18		3		304
6	303	39		3	16	20	85	15	89	15	40	3	11	1	12		3		179
7	291	41	4	5	24	8	98	14	80	12	38	3	3	1	5			1	152
8	195	34	2	3	25	4	73	4	47	15	18	1	3		1			1	88
Totals	4195	262	6	13	95	148	1555	356	1088	190	453	67	155	16	42	2	7	2	2378

TABLE XVIII.—The School Progress of Males and Females in Each Grade by Terms.

Grade	No. in grade	No. who gained	Gained 4	3	2	1	Normal 0	Lost 1	2	3	4	5	6	7	8	9	10	11	12	Total who Lost
1	1924	30				30	1182	178	432	21	63	8	14	1	9	1	1			712
2	1446	39				39	504	172	432	81	124	27	43	10	37	2	6	1		903
3	1259	65			7	58	342	118	316	91	188	29	54	9	25	4	3	1		852
4	1269	74			14	60	247	105	318	89	226	56	112	11	21	2		1	1	948
5	1030	86		4	28	54	216	62	248	47	226	20	91	10	9	2	1			728
6	671	74	1	7	32	34	168	37	210	30	100	9	32	2	2	2				429
7	522	64	5	8	37	14	160	30	157	20	68	5	14	2	2					298
8	336	58	3	3	42	10	116	13	87	19	29	2	8	1	2			1		162
Totals	8457	490	9	22	160	299	2935	715	2200	398	1024	150	368	46	105	11	11	3	1	5032

TABLE XIX.—SUMMARY OF SCHOOL PROGRESS OF 8457 PUPILS.

	No. of terms gained	No. of terms lost	No. of terms required for normal prog.	No. of terms actually required
Male	320	8,042	24,774	32,496
Female	401	6,737	25,141	31,477
Total	721	14,779	49,915	63,973

The number of terms required by the girls for normal progress exceeds the number required by the male by 367, although 67 less in number. The reason for this is that the number of girls in grades seven and eight included in this discussion is considerably larger than the number of boys, and since these belonged normally thirteen and fifteen terms, they accelerate the number of months required. The computations were made upon the basis of the grade in which the child was registered in February, 1909.

Taking table XIX as it stands, the assumption would necessarily have to be that during the entire school history of each child, it belonged to school every month and term. This of course is not the case. Undoubtedly a number of those who lost two, three, or more years have missed many months, some an entire term, and some even an entire year. Considered from an educational standpoint they are losses nevertheless. From a financial standpoint the problem may be somewhat different. But since the number of pupils per teacher is not determined by the average attendance but by the actual number enrolled, the loss of an entire month or two, or even a term, does not affect the schools economically. Irregular attendance does not mean a proportionate decrease in the school expenditure. The schools are affected from an economical standpoint by only the comparative few who missed an entire year, or at least a term.

In the superintendent's report for 1906 and 1907 the monthly expenditures per pupil for the years ending February 24, 1905, and February 23, 1906, are given as $1.48 and $1.54 respectively. Since the loss and gain in the above table cover in part the history of school progress extending over at least eleven years, ending February, 1909, let us assume that the average monthly expenditure per child was $1.40, or $6.00 per term.

Converting table XIX into economic or financial equivalents according to this assumption, we obtain the following table:

TABLE XX.—THE SCHOOL PROGRESS OF 8457 PUPILS
EXPRESSED FINANCIALLY.

	Amt. saved through gain in progress	Amt. spent on repetition	Amt. required for normal prog.	Amt. actually spent
Male	$1,920	$48,252	$148,644	$194,976
Female ...	2,406	40,422	150,846	188,862
Total	$4,326	$88,674	$299,490	$383,838

The table shows that approximately 25 per cent of the money spent in the education of the boys was spent in repetition, and in the education of the girls 21 per cent, a total average of 23 per cent. Although 67 less in number the girls made 56 per cent of the total gain and the boys only 44 per cent. Of the money spent for repetition the boys claim 54 per cent and the girls 46 per cent. The average expenditure per boy for the 4262 included in this discussion and on the above basis was $45.74 and for the 4195 girls $45.02. This would lead to the conclusion that on the average the elementary education of the boy costs 72 cents more than the education of the girl.

In diagram 10 the relation of the number of terms gained and lost by these 8457 boys and girls is shown graphically. As
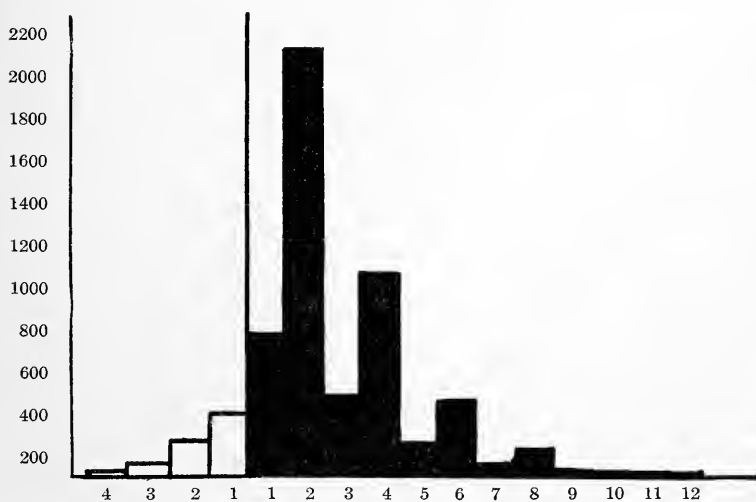
DIAGRAM 10. Number of terms gained and lost by 8457 boys and girls in the elementary grades. (White, gain; black, loss.)

previously stated there are comparatively few promotions and entrances in February, so that the losses of one, three, and five

Gain   Loss

DIAGRAM 11.   Relative gain and loss of 8457 pupils in the elementary grades.

terms are approximately only one-third as numerous as those of two, four, and six terms. The relative *amounts* of gain and loss are shown in diagram 11, the latter being approximately twenty times as large as the former.

PROMOTIONS.

According to the system in vogue two promotions are made annually, one in January, extending only through the first five grades, and the other in June, the promotions being of two kinds, either to a higher class or a higher grade. Furthermore, during the two terms of 1907-1908, 113 were promoted to a higher class and 26 to a higher grade. Adding these to the promotions in January and June gives 1791 promotions to a higher class and 832 promotions to a higher grade for the former, and 844 promotions to a higher class and 6642 promotions to a higher grade for the latter.

As yet there is no uniformity of opinion in regard to the method of obtaining the percentage of promotions. The question is, shall we use the total enrolment, the average enrolment, or the enrolment for the last month of each term, as the basis? On account of the great exodus in the fall and spring of the year it is, no doubt, an injustice to the system as well as to teachers and school authorities to use the total enrolment as the basis. It means basing the rate of promotion not only on the actual enrolment, but on a large additional number who have left school before they could be promoted. In this particular instance it would include 632, or 5.5 per cent of the total enrolment, who left school during the first term, and 977, or 8.5 per cent, who left school during the second term.

The average enrolment forms a more correct basis, especially for the first term, which was only six less than the January enrolment. Since the total enrolment naturally keeps on increasing and the average enrolment decreasing during the second term, the latter also forms the more correct basis. It is not, however, as accurate as the June enrolment, which in this case was 2.7 per cent less than the average enrolment.

For all school systems in which the name of the child is kept on the roll until such child has actually left school and is not simply a case of irregular attendance, the enrolment in January for the first term and the June enrolment for the second term undoubtedly form the fairest bases, since they represent the actual enrolment at the time of promotion, disregarding the comparatively few who leave during these months.

The following table shows the varied results obtained by these methods:

TABLE XXI.—RESULTS OBTAINED BY THREE DIFFERENT METHODS FOR COMPUTING PERCENTAGES OF PROMOTION.

	Number	Per cent of total enrolment	Per cent of av. enrolment	Per cent of month's enrolment
Jan. pro. to higher grade	832	7.2	7.6	7.6
" " " class	1791	15.5	16.5	16.4
June " " grade	6642	56.2	63.1	65.1
" " " class	844	7.1	8.0	8.3

On account of the comparatively few promotions to a higher grade in January, the difference between total enrolment and the average and January enrolment is only .4 per cent, and even for the promotions to a higher class the difference is only 1 per cent. The disparity is more forcibly shown in the results obtained for the second term. Here the difference between the first and the second methods for the promotions to a higher grade is 6.9 per cent, and between the second and third methods 2 per cent. Adding the per cent of promotion to a higher grade and a higher class for both terms we obtain 22.7, 24.1, and 24.0 per cent respectively for the three methods as the number promoted the first term, and 63.3, 71.1, and 73.4 per cent as the number promoted the second term, a total difference of 10 per cent between the first and third methods for the second term.

With a difference for the first term of 8.8 per cent between the number promoted to a higher grade and the number promoted to a higher class, and for the second term a difference of 56.8 per cent, it would seem that the system of midyear promotions is not yet fully established. It means more or less annual congestion, especially in grades four and five, with an inevitable loss of a half year to a large number of those who enter these grades in February. Approximately two-thirds of the girls and three-fourths of the boys who entered the fifth grade in February, 1908, lost the half year.

In this connection it is essential to consider also the admissions to the first grade, as shown in the following table:

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TABLE XXII.—ADMISSION TO THE FIRST GRADE.

</div>

	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	Total
1907-08—	1085	129	15	2	131	97	14	11	3	36	1523
1908-09—	1246	21	7	1	2	334	44	6	2	0	1663

It is evident that very rarely does an admission in January or June result in gain to a child, in a system having midyear promotions. The same is true for the months of December and May. For the months of November and April the chances for a gain of two months are one in fifteen. Of those who entered in March about one in ten gained the one month by completing the half year in four months.

The midyear system not having been fully installed, considerable loss was also sustained by those who entered the first grade in February, 1907 and 1908. Only one in eight completed the first grade in one year, thus causing a considerable loss to the 292 who entered the first grade from January to June, 1908. At this rate many of the half year losses, and a considerable number of the one year and a year and a half, can be accounted for, as we go up the grades. A failure in promotion at the end of the year meant in most cases another whole year in the same grade.

In the second grade only 164 pupils were promoted to the third grade in February, 1909, and these were confined to 20 of the 44 teachers in this grade. In other words 24 teachers made no promotions at this time and yet there were 167 boys and girls who had been in the grade a year and a half, and 259 two years. About the same thing is true of the third grade. Out of 41 teachers of this grade only 19 promoted from the second to the third grade in February, 1909. The total number promoted was 128, and there were 135 who had been in the grade a year and a half and 227 two years.

As shown in the above table, however, great improvements have been made during the last year by confining admissions to the first grade to the first month of each term. For the last three months of the first term the number admitted has been reduced from 148 to 10, and for the last three months of the second term from 50 to 8, none having entered in June as compared with 36 the preceding year.

IV.

Age of Entrance.

In the discussion of retardation we have assumed a child
five years of age or less to be below normal age for the first
grade, from six to seven years of normal age, and eight years
and over above normal age. Computing ages of entrance to the
first grade for the eight elementary grades shows that the ages
varied from three and a half to twelve and a half years. Three
girls entered the first grade at three and a half years of age, one
boy and seven girls at four years of age, and twenty-one boys and
twenty girls at four and a half years. Adding these to the five
year olds we have a total of 23.5 per cent of those who entered
the first grade and are now in the eighth, who were below normal
age at the time of entrance. Of those who entered the first grade
and are now in the seventh, 23.3 per cent were below normal age,
and in the sixth grade 21.4 per cent. Approximately the same
number of those who entered the first grade and are now in the
fourth and fifth grades, were below normal age, 20.5 per cent of
the former and 22.3 per cent of the latter.

During the last three years decided reductions have been
made in the group below normal age. Of the third grade only
13.5 per cent entered the first grade below normal, of the second
grade 12.3 per cent, and of the first only 10.7 per cent, a total
reduction of 12.8 per cent in approximately eight years and a very
marked improvement.

Of the normal age group of those who entered at the age
of six, the number increased from 63.9 per cent for the eighth
grade, to 71.6 per cent for the third grade, and to 69.0 per cent
for the first grade. Simultaneously the number who entered the
first grade at the age of seven increased from 10.0 per cent for
the eighth grade to 14.9 per cent for the first grade. In other
words, the normal age group of entrance to the first grade increased
10 per cent in the last eight years.

Since elimination is obviously greatest among the over-age
group, very few of them reach the eighth grade. Of those who
enter the first grade at the age of eight only one-sixth reach the
eighth grade, and only one in ten of these nine years old at
entrance reach the seventh grade. It was therefore impossible

to measure accurately the changes in the per cent of over-age pupils upon entrance, for these eight years. For the last two years the percentages of over-age pupils were 5.5 and 5.3 per cent, the ages of the former varying from eight to twelve, and of the latter from eight to eleven.

As shown in the following table there is a decided difference between the average ages of those who completed the grade in a half year, a year, a year and a half, and those who spent two years or more in the same grades. The average reduction between the first and last group for the first four years was six-tenths of a year.

Table XXIII.—Average Ages of Pupils Who Spent a Half
Year, a Year, a Year and a Half, and Two Years
and Over in the Same Grade.

Grades	½ year	1 year	1½ years	2 years and over
1	7.06	6.67	6.38	6.21
2	8.00	7.63	7.54	7.26
3	8.91	8.77	8.66	8.47
4	9.85	9.94	9.68	9.47
5	10.74	10.54	10.62	10.88

The average ages of the pupils who spent two years and over in the same grade increased .67 of a year above the normal allowance from the first to the fifth grade. The rate of increase in this connection is especially worthy of note. The increase from the first to the second grade is only .05 of a year above the normal, but from the second to the third grade .21 of a year. Then from the third to the fourth grade there is no increase above the normal, but from the fourth to the fifth grade there is a decided increase of .41 of a year above the normal. This seems to indicate that the adaptation of the course of study or methods of teaching to the average mental status of the pupils enrolled, varies in the different grades, the average child taking longer to complete some grades than others.

On the average there is very little difference between the ages of entrance of the boys and girls. As shown in the following table the average of entrance of the boys to the first grade was 6.28 years and of the girls 6.27 years. But on account of the greater retardation among the boys, the difference increases to almost a fourth of a year in the fourth grade. The reduction below the normal rate of increase for the boys from the fourth to the fifth grade, and for the girls from the fifth to the sixth grade,

seems to contradict the statement that for the boys retardation reaches its maximum in the fifth grade and for the girls in the fourth grade. The reason for this apparent anomaly is found in table XIV, which shows that 5.9 per cent of the boys and only 2.8 per cent of the girls completed the fourth grade in a half year, thus reducing the age for the former in the fifth grade. But in this same grade 1.9 per cent more of the boys spent two years and over in the grade.

The maximum effect of retardation in increasing the average age of the grade is .70 of a year in the fourth grade for the boys, and .50 of a year in the fifth grade for the girls. In other words, it will take the average boy of the fourth grade 8.70 years to complete the eight elementary grades and the average girl of the fifth grade 8.50 years. This would seem to indicate that the course of study or method of teaching is too advanced for the average child and is responsible for some of the retardation.

TABLE XXIV.—AVERAGE AGES OF PUPILS IN THE ELEMENTARY GRADES IN OCTOBER, 1908.

Grade	Male	Female	Differences
1	6.28	6.27	.01
2	7.62	7.54	.08
3	8.77	8.69	.08
4	9.98	9.75	.23
5	10.92	10.77	.15
6	11.71	11.53	.18
7	12.68	12.37	.29
8	13.70	13.54	.16

The effect of elimination becomes especially operative from the fifth to the sixth grade, reducing the average age for the boys .21 of a year and for the girls .24 of a year. In the seventh grade is found the maximum difference of .29 of a year between the ages of the boys and girls, there being another reduction of .16 of a year for the girls and only .03 of a year for the boys. The maximum effect of elimination is a reduction of .30 of a year in the ages of the boys and .40 of a year in the ages of the girls.

In order to find out what part the age of entrance plays in school progress, the percentages of those pupils who made normal progress, those who lost one year, and those who lost two years, were computed for the ages three and a half to eleven years, for grades two to eight. As shown in the following table, 26.2 per

cent of those who entered school at the age of four and a half and below made normal progress, 32.2 per cent lost one year, and 41.7 per cent lost two years. Of the boys and girls who entered at the age of five, 19.7 per cent made normal progress, 41.8 per cent lost one year, and 38.6 per cent lost two years. Of those who entered at the age of five and a half, 27.6 per cent made normal progress, 44.7 per cent lost one year, and 27.8 per cent lost two years, a decrease of 13.9 per cent in the number who lost two years, and an increase of 12.5 per cent in the number who lost but one year. Taking the group who entered the first grade below the normal age of six, as a whole, 24.5 per cent made normal progress, 39.6 per cent lost one year, and 36 per cent lost two years.

TABLE XXV.—COMPARISON OF NORMAL PROGRESS, AND ONE AND TWO YEAR LOSSES ON THE BASIS OF AGE OF ENTRANCE.

Ages	Normal Prog.	Average	Lost 1 year	Average	Lost 2 years	Average
4½ & below	26.2		32.2		41.7	
5	19.7		41.8		38.6	
5½	27.6	24.5	44.7	39.6	27.8	36.0
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
6	40.4		38.9		20.7	
7	41.1	40.8	36.5	37.7	22.4	21.6
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
8	45.9		38.5		15.6	
9	58.1		41.9		0	
10 & above	70.7	58.2	19.3	33.2	10.0	8.5

In the normal group there is very little difference in the progress of those who entered at the age of six and those who entered at seven. Approximately 41 per cent made normal progress, 38 per cent lost one year, and 21 per cent lost two years. Comparing the progress of this group with that of the preceding shows that 16 per cent more of the normal group made normal progress, 2 per cent less lost one year, and 15 per cent less lost two years. Although not complete in their analysis, these results certainly seem to warrant the exclusion from school of all children below the age of six. It shows that very few boys and girls are mentally qualified, to say nothing of their physical qualifications, to take up the required work of the first grade below the age of six. Such exclusion, resulting in a reduction of the losses sustained in the elementary grades, will not only be an economic gain, but a real benefit to the children in question.

TABLE XXVI.—COMPARISON OF NORMAL PROGRESS, AND ONE
AND TWO YEAR LOSSES IN GROUPS.

Groups	Normal Prog.	Lost 1 year	Lost 2 years
Below normal age	24.5	39.6	36.0
Normal age	40.7	37.7	21.6
Above normal age	58.2	33.2	8.5

Of the group above normal age, the number who made normal progress obviously increases from the ages eight to eleven, and the losses of two years decrease, the average of the former being 58.2 per cent and of the latter 8.5 per cent. The one year losses vary but little, the average for this group being 33.2 per cent, 6.4 per cent less than of the first group.

Another factor to be considered relative to entrance is the number of additions to the different grades other than through promotion. Since there is no uniformity of instruction in our public school systems, a change in residence from one locality or city to another means in most cases a loss of a year or more to the child of public school age, and as such it plays an important part in retardation. According to the records on the blanks, and for an average of two years, only 948 per thousand entered the second grade through promotion. Fifty-two were admitted from other schools. In the third grade 55 pupils per thousand had completed grades one and two in other schools, and in grade four 36 per thousand completed the previous grades in other schools. The increase in the number admitted to the fifth grade is undoubtedly due to the fact that two of the parochial schools teach only the first four grades, which also applies to the increase in the eighth grade, so that 41 per thousand may be somewhat higher than the average per cent of admission to this grade.

TABLE. XXVII.—ENTRANCES PER THOUSAND OTHER THAN
THROUGH PROMOTION TO GRADES TWO TO EIGHT.

Grades	Per thousand enrolled	
2	52	
3	55	
4	36	
5	41	
6	28	
7	20	
8	27	259

The admissions to the upper three grades were respectively 28, 20 and 27 per thousand, a total admission of 259 to these seven grades, or an average annual admission per grade from other schools of 37 per thousand.

Table XXVIII.—Per Cent of the Number in Each Grade Who Were Admitted After the First Grade.

Grades	Per cent
2	5.2
3	10.7
4	14.3
5	18.4
6	21.2
7	23.2
8	25.9

To show the full effect on each grade of this constant accretion from other schools, the above table must be recast on a summation basis. As a class goes up through the grades, some pupils fall behind and others are added from outside sources, so that even by the end of the second year 5.2 per cent of the enrolment had not belonged to the class the first year. By the end of the third year 10.7 per cent of the enrolment were additions, and by the end of the fourth year 14.3 per cent. During the fifth year even more are added than in the preceding year, the total change being 18.4 per cent. With the number added in the sixth grade we have 21.3 per cent who have been admitted to the class since the beginning of the second year. As shown in the preceding table, 2 per cent more are added in the seventh grade, and 2.7 per cent in the eighth, making a total increase in the enrolment from the first grade of 25.9 per cent.

It was impossible with the data on hand to compute accurately the amount of loss sustained through change in residence. But a fair approximation to it can be obtained by computing on the one hand the average age for each grade of those who received all their instruction in the Reading public schools, and on the other the average age of those who took the work of one or more grades in another school.

In the following table are shown the average ages of these two groups for grades five, six, seven, and eight.

TABLE XXIX.—AVERAGE AGES OF THOSE WHO ATTENDED ONLY
THE READING PUBLIC SCHOOLS, AND OF THOSE WHO
FORMERLY COMPLETED ONE OR MORE YEARS
IN ANOTHER SCHOOL.

Grades	Reading schools only			One or more years in another school		
	Male	Female	Average	Male	Female	Average
5	11.56	11.26	11.41	12.35	12.06	12.21
6	12.22	11.92	12.07	12.70	12.50	12.60
7	12.93	12.72	12.83	13.17	13.12	13.15
8	13.68	13.50	13.59	13.98	13.89	13.94

With an average difference of .80 of a year between the ages of the two groups in the fifth grade, .53 of a year in the sixth, .32 of a year in the seventh, and .35 of a year in the eighth grade, the retarding effect of a change in residence becomes very evident.

Computing the total losses thus sustained by multiplying the average loss per child by the number in each of the above five grades who entered from other schools, then converting these years into school months, we obtain the following table:

TABLE XXX.—LOSS SUSTAINED BY PUPILS IN GRADES FIVE,
SIX, SEVEN, AND EIGHT THROUGH CHANGE IN RESIDENCE.

Grades	Number from other schools		Total number of months lost		Number of months lost through change		Per cent of total loss		
	M.	F.	M.	F.	M.	F.	M.	F.	Av.
5	170	120	7,665	4,915	1333	960	17.4	19.5	18.4
6	146	139	3,720	2,630	701	806	18.8	30.6	24.7
7	63	88	2,025	2,050	151	352	7.5	17.2	12.4
8	51	59	1,065	1,190	153	230	14.4	19.3	16.9
Totals	430	406	14,475	10,785	2338	2348	16.2	21.8	19.0

On the blanks 170 male and 120 female pupils of the fifth grade were recorded as having completed one or more years in another school. Since the boys on the average are .79 of a year older than those of their class who attended only the Reading public schools, and the girls .80 of a year, the total loss thus sustained by the boys is 1333 months and by the girls 960 months. The total number of months lost by the boys of this grade is 7665, and by the girls 4915 months. The boys therefore lost 17.4 per cent of the total loss through changes in the schools attended, and the girls 19.5 per cent. On this same basis the amount of loss sustained by the boys of the sixth grade was 18.8 per cent of the total and by the girls 30.6 per cent.

Since the computations for the boys in the seventh grade had to be based upon a number considerably less than the actual male enrolment in this grade, the 7.5 per cent given in the table is no doubt considerably less than the actual per cent of loss sustained through change of schools. The loss similarly incurred by the girls of this grade was 17.2 per cent of the total, and in the eighth grade they were respectively 14.4 per cent and 19.3 per cent of the total.

In the last three grades especially, the per cent of the loss sustained by the girls through change of schools is considerably greater than for the boys, and on the average 5.6 per cent greater. This seems to be too great a disparity, and is evidence of the need of further research along this line. If it be true that approximately 20 per cent of the total losses by the pupils enrolled in grades five to eight are due to change of residence, or a change from private to public school, the losses thus sustained demand due consideration in a study of the causes of retardation. And before fixing the responsibility, such factors as non-attendance and late entrance must likewise be considered.

V.

ELIMINATION.

Elimination is closely allied to retardation. In the perusal of school records of enrolment it is the first factor that claims our attention. When we notice that for every one hundred enrolled in the first grade there are only 27 in the eighth grade, its presence and effectiveness become still more evident.

On the average, during the years 1903-1908, the number enrolled in the second grade for the month of October was 15.9 per cent less than in the first grade. The numbers enrolled in grades two, three, and four were on the average nearly equal. From grade four to five the diminution began to be more pronounced, having been on the average 8.7 per cent during these six years. But the most decided change was from the fifth to the eighth grade, with an average reduction of 24.5, 31, and 32.1 per cent.

During the same years the per cent of decrease from grade one to two, grade one to three, and so on, based upon the average enrolment in each grade for these years, is shown in the following table:

TABLE XXXI.—PER CENT OF DECREASE THROUGHOUT THE
EIGHT ELEMENTARY GRADES, BASED UPON THE
ENROLMENT IN THE FIRST GRADE

Grades	Male	Female	Average
First to second	18.5	13.2	15.9
" " third	19.6	12.3	16.4
" " fourth	17.9	15.0	16.4
" " fifth	27.0	22.7	24.8
" " sixth	48.6	39.2	43.9
" " seventh	65.9	56.4	61.1
" " eighth	77.1	70.1	73.6

The marked decrease from the first to the second grade as compared with the decrease from the first to the third and the first to the fourth, is due to the large per cent of repeaters in the first grade. If the number who lose a half year be deducted, the enrolment in the first four grades will be approximately equal.

But after the fourth grade the number eliminated increases rapidly until in the eighth there are only 23 boys and 30 girls left out of every one hundred boys and one hundred girls enrolled in the first grade.

As shown in this table, the decrease in the number of boys from the fourth to the fifth grade is greater than in the number of girls. This is not a contradiction of the fact stated in the section on retardation, that more of the girls leave the fourth grade than of the boys. This has been true during the last two years (1907 and 1908). The reason for this apparent contradiction is that more of the girls were immediately benefited by the new course of study. During the last two years the average decrease in the number of girls from the first to the fifth grade was 26.5 per cent and in the number of boys only 21.1 per cent. The 18.4 per cent of the number of girls who left in the fourth grade to go to work as compared with the 10.4 per cent of the number of boys, also corroborates the fact that more girls than boys drop out of school from the fourth to the fifth grade.

TABLE XXXII.—AVERAGE DECREASE IN THE OCTOBER ENROL-
MENT IN 1907 AND 1908.

Grades	Male	Female	Average
First to second	17.0	14.1	15.6
" " third	18.9	12.1	15.5
" " fourth	15.1	10.7	12.9
" " fifth	21.1	26.5	23.8
" " sixth	47.3	42.4	44.9
" " seventh	66.9	58.3	62.6
" " eighth	77.1	72.1	74.6

On account of the changes made, the fluctuations in the enrolment of the different grades previous to 1906 were more or less abnormal. It therefore seems advisable to compare with the above figures the average decrease and elimination throughout the grades during the last two years. Comparing this table with the preceding, shows that during the last two years the apparent elimination, or in other words the number of repeaters in the first five grades, has decreased 5.7 per cent, and the elimination in grades six, seven, and eight has increased 3.5 per cent. This is another evidence of the marked and constant improvement in the elementary grades. It means that during the last two years the number of repeaters has been diminished nearly 6 per cent, in the lower grades, and that a larger per cent reaches grades five and six, thus temporarily increasing the per cent of elimination in

grades seven and eight. The number eliminated from the eighth grade to the first year of the high school has also increased for the boys from 4.6 per cent in the fall of 1906 to 14.1 per cent in 1907, and to 15.8 per cent in 1908. The reason for this is that the opening of the new Boys' High School was an incentive strong enough to hold nearly all the boys who completed the eighth grade that year. For the girls the elimination for the same years was 22.2, 22.3, and 12.9 per cent respectively, a decided improvement for the last year.

The additions that are constantly made are thus more than balanced by the withdrawals, especially during the second term. Unfortunately the records were not complete enough to make possible a detailed analysis of the causes of leaving. Out of 993 cases of leaving, 30 per cent furnished no information with regard to the causes. It is therefore impossible to compute accurately the per cent that go to work, or leave the city, or enter the parochial schools, or drop out for other reasons. Classifying the withdrawals under these four heads, and including the few deaths under the miscellaneous, we find that 30.6 per cent left to go to work, 17.4 per cent left the city, and 21.3 per cent went to the parochial schools. The remaining 30.4 per cent must be classed under miscellaneous.

TABLE XXXIII.—CAUSES AND PERCENTAGES OF WITHDRAWALS.

	Went to work	Left the city	Went to parochial school	Miscellaneous
Boys	30.7	17.0	20.8	31.3
Girls	30.5	17.8	21.8	29.7
Average	30.6	17.4	21.3	30.4

Disregarding the causes and classifying them according to grade, we obtain the following table:

TABLE XXXIV.—PERCENTAGES OF WITHDRAWALS IN EACH GRADE.

	1	2	3	4	5	6	7	8
Boys	17.6	15.6	16.2	13.0	11.2	13.4	7.2	4.6
Girls	14.6	16.0	13.0	15.6	12.4	10.6	9.0	8.2
Average	16.1	15.8	14.6	14.3	11.8	12.0	8.1	6.4

Judging from these 993 cases of withdrawals, it would seem that approximately 16.0 per cent leave in the first two grades, 14.5 per cent in grades three and four, 12 per cent in grades five and six, 8 per cent in the seventh, and 6 per cent in the eighth.

Of more direct interest is the grade distribution in four groups based upon the causes of leaving just mentioned. None of those who went to work left in the first grade. Of the boys of this group, 2.6 per cent left in the second grade, and .6 per cent of the girls. More than a tenth of the boys left in the third grade, and only 2.6 per cent of the girls. Another tenth of the boys left in the fourth grade and 18.4 per cent of the girls, an increase of 15.8 per cent over the third. Adding to these the number leaving in the fifth grade, we have 43.0 per cent of the boys who do not get beyond the fifth grade, and 46.6 per cent of the girls. Exactly one-fourth of the girls of this group left in the fifth grade and

TABLE XXXV.—GRADE DISTRIBUTION OF THE WITHDRAWALS
ON THE BASIS OF CAUSE OF LEAVING.

	Went to work			Left city			Went to parochial school			Miscellaneous		
Grade	M.	F.	Av.	M.	F.	Av.	M.	F.	Av.	M.	F.	Av.
1	0	0	0	35.2	31.4	33.3	23.0	25.9	24.4	21.7	11.4	16.5
2	2.6	.6	1.6	27.0	16.8	21.9	27.8	35.1	31.4	14.7	17.5	16.1
3	11.1	2.6	6.9	14.2	16.8	15.5	30.7	27.7	29.2	15.3	10.8	13.0
4	10.4	18.4	14.4	12.9	10.1	11.5	13.4	8.3	10.9	15.3	21.6	18.4
5	18.9	25.0	22.0	4.7	11.2	7.9	4.8	.9	2.9	10.8	8.7	9.8
6	32.0	20.3	26.2	3.5	6.7	5.1	0	0	0	9.6	10.8	10.2
7	15.6	17.7	16.7	0	4.4	2.2	0	0	0	7.6	9.5	8.6
8	9.1	15.1	12.1	2.3	2.2	2.3	0	1.8	.9	4.4	9.5	6.9

another one-fifth in the sixth. The largest number eliminated of this group was 32 per cent (boys) in the sixth grade. Three and six-tenths per cent more girls than boys were eliminated during the first five grades. But as previously said, more of the girls continue to grades six, seven and eight, so that by the end of the sixth grade exactly three-fourths of the boys of this group have been eliminated and only 66.9 per cent of the girls. In the seventh grade 15.6 per cent more of the boys and 17.7 per cent more of the girls are eliminated, a total of 90.6 per cent of the boys and 84.6 per cent of the girls, for the first seven grades, leaving approximately 9 per cent of the boys and 15 per cent of the girls who continued to the eighth grade.

The records of 134 boys and 147 girls who went to work, show that only 20 per cent of the former and 24 per cent of the latter made normal progress. Two boys and one girl gained one year and two girls a year and a half. The remaining 112 boys lost from one-half to five years and the 120 girls from one-half to four and a half years. Four boys and 9 girls lost one term, and 38 boys and 32 girls two terms. Six boys and 11 girls lost three terms, and 23 boys and 40 girls four terms. Of the remain-

ing 41 boys and 28 girls, 9 boys and 3 girls lost five terms, and 23 boys and 18 girls six terms. Seven boys and six girls lost eight terms, one girl nine terms, and two boys ten terms, or five years. Expressed in percentages, 47.8 per cent of the boys and 46.3 per cent of the girls lost two years and over, and 23.9 per cent of the boys and 17.1 per cent of the girls lost three years and over.

Of those who left the city, by far the largest number left in the first grade, 35.2 per cent of the boys and 31.4 per cent of the girls. Taken as a whole the disparity between boys and girls is considerably less in this group. The greatest difference is in the second grade, where 27.0 per cent of the boys of this group and only 16.8 per cent of the girls left the city. On the average there is an uninterrupted decrease from the first to the seventh grade in the number leaving the city.

Of the number who go to the parochial school, the disparity between the boys and girls is even less than in the preceding group, the greatest difference being in the second grade, where 27.8 per cent of the boys of this group and 35 per cent of the girls left the public schools. On the average 29.2 per cent left in the third grade, 10.9 per cent in the fourth, and 2.9 per cent in the fifth. On account of the uncertainty, it is obvious that very little significance can be attached to the miscellaneous group.

In diagrams 12 and 13 is shown the approximate relation between retardation and elimination, the former on the basis of the number in each grade and the latter on the basis of age. In each diagram the dotted line represents the number of normal age pupils.

DIAGRAM 12. Relation of retardation and elimination on basis of number in each grade.

DIAGRAM 13. Relation of retardation and elimination in elementary grades on basis of age.
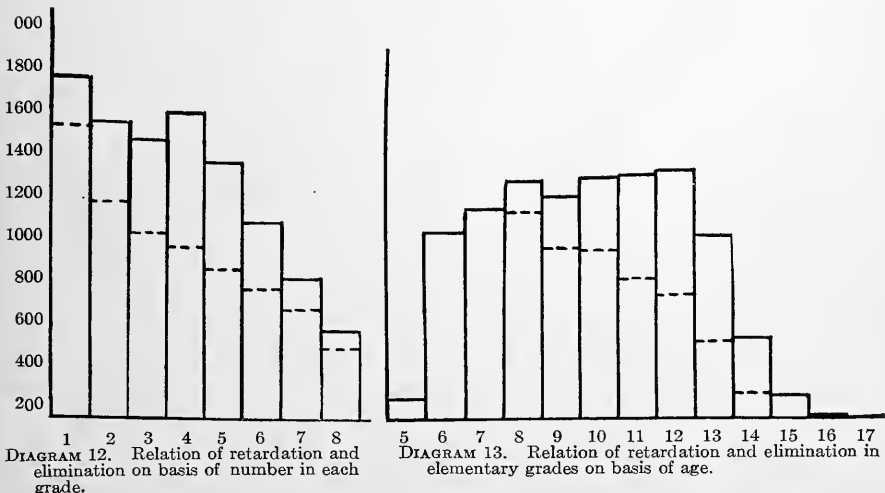
VI.

Attendance.

According to the common school laws of Pennsylvania each school board is authorized to fix the compulsory standard of attendance for the ensuing year at its June meeting, provided such standard is not below 70 per cent of the number of days in the school year of the said district. This means that every child between the ages of eight and fourteen must attend at least one hundred and forty days in a school year of ten months, unless excused by the school board "upon the presentation of satisfactory evidence showing that such child is prevented from attendance upon school or application to study by mental, physical, or other urgent reasons."

There are perhaps no data in the school records and reports that are more obscure and meaningless than the percentages of attendance. In many cases they are analogous to the unknown quantity x in algebra, whose real value must first be computed to make it concrete and definite. In one report 98 per cent of attendance may be in reality the same as 89 per cent in another report. In the one case all pupils with an absence of two, three, four, or more successive days are temporarily dropped from the roll, at least in the computation of the per cent of attendance, while in the other they are kept on the roll until the end of the month or until they shall have left school permanently. Such diverse methods ought not to prevail in the same country, and much less in the same state. They are therefore problems to be considered by our state educational associations. It is obvious that as long as the school reports obscure the existing conditions, thus keeping the community in ignorance, we cannot expect concerted action in effecting a change in the remediable causes producing such conditions.

Under normal conditions normal progress means regular attendance, irregular attendance means retardation, and retardation means early elimination. It is therefore essential to consider in detail the factor of attendance in its relation to these elements. When we consider that for a possible attendance of 1,308,255 days by the 6709 boys and girls included in the following discussions, we have only an actual attendance of 1,161,759 days, a loss of

146,496 days or more than 11 per cent, the importance of the factor of attendance in its relation to school progress becomes clearly evident.

Of these 6709 boys and girls, 4889 belonged to the promoted class for 1907-1908 and 1820 to the non-promoted. Classified according to grade they are as follows:

TABLE XXXVI.—CLASSIFICATION BY GRADES OF 4889 PUPILS PROMOTED AND 1820 NOT PROMOTED.

	Promoted			Non-promoted		
Grades	M.	F.	Total	M.	F.	Total
1	309	375	684	241	185	426
2	369	370	739	204	124	328
3	364	461	825	125	121	246
4	447	418	865	146	148	294
5	403	344	747	191	128	319
6	259	343	602	77	55	132
7	191	236	427	27	26	53
8				11	11	22
Totals	2352	2547	4889	1022	798	1820

The relative attendance of these two groups is shown in the following table in periods of ten days, with lines dividing the table into periods of one-fourth the number of days in a ten months' term.

TABLE XXXVIII.—ATTENDANCE OF PROMOTED AND NON-PROMOTED PUPILS ON THE BASIS OF A THOUSAND, AND PERCENTAGES IN GROUPS OF ONE-FOURTH.

Days	Promoted	Per cent	Non-promoted	Per cent
190 to 200........	284		162	
180 " 190........	289		188	
170 " 180........	169		154	
160 " 170........	107		113	
150 " 160........	57	90.6	96	71.3
140 to 150........	41		72	
130 " 140........	25		61	
120 " 130........	12		38	
110 " 120........	7		27	
100 " 110........	4	8.9	28	22.6

TABLE XXXVIII   (*Continued*).

Days			Promoted	Per cent	Non-promoted	Per cent
90	to	100........	1		20	
80	"	90........	1		12	
70	"	80........	1		11	
60	"	70........	1 ·		6	
50	"	60........		.4	4	5.3
40	to	50........	1		2 ·	
30	"	40........			1	
20	"	30........			4	
10	"	20........		.1	1	.8
			1000	100.0	1000	100.0

Since the relation between the two groups in this table is based upon the attendance of pupils who belonged the entire year, entering not later than October, the reason for which is given later, the percentages of attendance for three-fourths and less of the time for both groups represent the minimum percentages. They would obviously be increased if the attendance of the total enrolment were taken, especially for the non-promoted group. Even on this minimum basis the effect of irregular or non-attendance as a factor causing retardation is distinctly shown.

Grouping them on the basis of fourths of the number of days, we obtain the following table from the foregoing.

TABLE XXXVIII.—PERCENTAGES OF ATTENDANCE ON THE BASIS OF FOURTHS OF THE NUMBER OF DAYS.

Days attended	Promoted	Non-promoted	Difference
More than three-fourths.....	90.6	71.3	19.3
One-half to three-fourths....	8.9	22.6	13.7
One-fourth to one-half......	.4	5.3	4.9
Less than one-fourth........	.1	.8	.7
	100.0	100.0	38.6

As shown in the table, 19.3 per cent more of the promoted group attended more than three-fourths the number of days taught; 13.7 per cent more of the non-promoted group attended only from one-half to three-fourths the time; and 5.6 per cent more attended less than half the time, the total difference being 38.6 per cent.

In diagram 14 is shown the relative attendance of both the promoted and the non-promoted group. The broken bars represent the per cent of the non-promoted who attended less than the number of days recorded at the head of the column and the dotted bars the per cent of the promoted group.
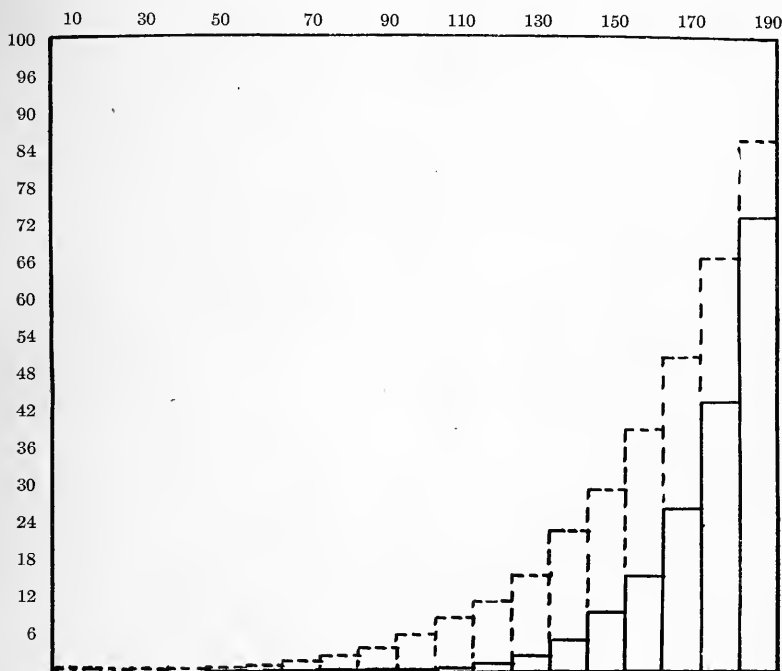

DIAGRAM 14. Attendance of 1856 pupils not promoted, and 4889 pupils promoted. White ground represents attendance, broken bars the absences of the former, and solid bars the absences of the latter.

The actual number of days taught in 1907-1908 was 195. In order to measure more accurately the number of pupils who attended 70 per cent of the time, thus living up to the state requirements, the 195 days are divided into groups of thirty days, on the basis of two hundred, with the exception of 49 days and below, which are comparatively few in number and are therefore placed in one group. In obtaining the possible number of days, the 195 days taught were used, and to get the actual number of days attended, the number who attended 190 days and over was multiplied by 193 days as an average; the number who attended from 180 to 190 days by 185 days as an average; the number who attended from 170 to 180 by 175 days as an average, etc. Although this will not give the exact number

of days attended, the number obtained is a close approximation
to it and sufficiently accurate for our purpose.

For the promoted group it was impossible to obtain from
the blanks the attendance for the eighth grade, so that the totals
are those of the first seven grades only. For the non-promoted
group as shown in the table, the eight elementary grades are
included.

Classifying the promoted group in divisions of thirty days
as above discussed, and on the basis of a hundred, we obtain table
XXXIX. The dotted line marks the division between those who
attended the legally required number of days, and those who
did not.

TABLE XXXIX.—PERCENTAGES OF ATTENDANCE OF THE PRO-
MOTED PUPILS IN GROUPS OF THIRTY DAYS.

Days attended	1	2	3	Grades 4	5	6	7	Av. total
170 and over	56.	68.8	74.9	77.9	79.7	83.6	85.	74.4
140 to 170	34.7	25.1	19.4	17.1	17.0	14.8	13.3	20.5
. . . .
110 to 140	8.3	4.7	4.6	4.3	3.1	1.7	1.5	4.3
80 " 110	1.0	1.4	1.2	.5	.3		.3	.7
50 " 80	.1			.2				.05
49 and less	.1							.05

As indicated by this table, there is no minimum limit to the
number of days of attendance necessary for promotion, nor should
there be. In this connection it is essential to discriminate between
irregular attendance and prolonged absence. The former is un-
doubtedly most detrimental both to scholarship and progress, and
is in many cases at the root of indifference to things pertaining
to school. In regard to the banefulness of prolonged absences,
much depends upon the time of the year when such absences occur.
An absence of sixty days at the opening of school is in many cases
not as harmful as an absence of thirty days at the end of the year.
Unfortunately the data of attendance on the blanks were not suffi-
ciently complete to make possible an analysis of all the factors that
should be considered in a full discussion of the subject. In very
few cases was it possible to tell from the blanks whether or not a
prolonged absence as indicated by the vacant spaces was a real

absence, or was only a case of transfer, in which case the record of attendance would be in another school. We were therefore compelled to include in this discussion the attendance of only such pupils as were admitted not later than October and remained in the same school for the entire year. The result of this is that the percentages of attendance obtained in the computation of these tables are undoubtedly better than the real total attendance of the pupils enrolled would show.

As shown in the above table, 5 per cent of the promoted group attended less than 70 per cent of the number of days taught. These were for the most part from twelve to fourteen years of age and greatly retarded. In many cases it was a question of promotion as an incentive to continuing the pupil's school life, and of giving the boy or girl an extensive rather than intensive knowledge of the elementary subjects, a wise provision for exceptional cases. On the average out of every one hundred of the promoted class, seventy-five attended one hundred and seventy days and over, twenty attended from 140 to 170 days, four from 110 to 140 days, and one attended less than eighty days.

TABLE XL.—PERCENTAGES OF ATTENDANCE OF NON-PROMOTED PUPILS IN GROUPS OF THIRTY DAYS.

Days attended	1	2	3	Grades 4	5	6	7	8	Av. total
170 and over	26.6	52.1	52.0	60.4	56.9	63.4	60.4	63.7	54.6
140 to 170	36.7	27.4	24.4	26.0	25.1	27.8	26.4	27.3	27.6
. . . .									
110 to 140	18.7	11.7	15.9	9.1	10.6	5.4	11.4	4.6	10.9
80 " 110	12.8	6.2	4.5	3.4	4.7	1.9			4.2
50 " 80	4.0	2.3	2.5	.3	2.3	1.2	1.9	4.5	2.4
49 and less	1.3	.3	.8	.9	.4	.6			.5

Of the non-promoted group the percentages of attendance are similarly recorded in the foregoing table. Eighteen per cent of this group attended less than 70 per cent of the time, almost four times as many as of the promoted group, leaving only 82 per cent who attended 140 days and over as compared with 95 per cent of the preceding group. Out of every hundred of the non-promoted group, approximately 55 attended more than 170 days, 27 attended from 140 to 170 days, and 18 attended less than the legally required 140 days.

Lack of attendance is obviously greatest in the lower grades. In the following table the relative attendance of the two groups is shown on the basis of 70 per cent of the time and over, and less than 70 per cent of the time, for the first seven grades.

TABLE XLI.—PERCENTAGES OF ATTENDANCE OF THE PROMOTED AND NON-PROMOTED PUPILS ON THE BASIS OF 70 PER CENT OF THE NUMBER OF DAYS.

	Grades							Average
70 per cent and over	1	2	3	4	5	6	7	
Promoted	90.6	93.8	94.3	95.0	96.7	98.4	98.4	94.9
Non-promoted	63.3	79.5	76.4	86.4	82.0	91.2	86.8	81.2
Less than 70 per cent								
Promoted	9.5	6.1	5.8	5.0	3.4	1.7	1.8	5.1
Non-promoted	36.8	20.7	23.7	13.7	18.0	9.1	13.3	18.6

With an average difference of 13.7 per cent between the attendance of the promoted group and the non-promoted, of those who attended 70 per cent of the time and over, it is evident that lack of attendance as a cause of retardation is a very important factor. In grade one the difference between the two groups reaches the high per cent of 27.3. In the second and fifth grades the difference in attendance between the two groups is approximately 14.5 per cent, and increases to almost 18 per cent in the third grade. The least differences in the attendance are in the fourth and sixth grades,—8.6 per cent for the former and 7.2 per cent for the latter.

On account of the low attendance of a considerable number of the promoted class, it is impossible to compute the number who failed in promotion because of irregular attendance or non-attendance. Assuming an attendance of 70 per cent to be essential for promotion under normal conditions, and then deducting the percentages of the promoted in each grade with an attendance less than 70 per cent of the time, from the non-promoted who attended less than 70 per cent of the time, a fairly close approximation to it can be obtained. As shown in the following table, we have 140 for the first grade, out of a total of 155 who attended less than 70 per cent of the time, or 32.9 per cent of the total number not promoted failed through lack of attendance.

Table XLII.—Effect of Non-attendance as a Cause of Non-promotion.

Grades	No. attending less than 70 per cent of time	No. not promoted through lack of attendance	Per cent not promoted through lack of attendance
1	155	140	32.9
2	65	61	18.6
3	58	55	22.3
4	46	44	13.4
5	53	51	16.0
6	12	12	9.1
7	7	7	13.2
Totals	396	370	20.1

On the same basis of the 65 in the second grade who attended less than 70 per cent of the time and failed in promotion, 61 failed because of lack of attendance, or 18.6 per cent of the total number not promoted in this grade. In the third grade 22.3 per cent failed because of lack of attendance. In grades four and seven approximately 13 per cent, and in grade five 16 per cent failed because of non-attendance. The minimum of 9.1 per cent is reached in the sixth grade. Taken as a whole, of the 390 boys and girls who attended less than 70 per cent of the time and failed in promotion, 370 or 20 per cent or one-fifth of the non-promoted group failed because of lack of attendance.

From the foregoing discussion it is obvious that this is not a correct measure of irregular or non-attendance as a factor causing non-promotion. It is safe to say, however, that 20 per cent represents at least the minimum number who fail in promotion because of lack of attendance. No doubt a considerable number of the non-promoted group who attended only from 140 to 170 days must be added to this number, since the per cent of the non-promoted is 7 per cent higher than of the promoted. It is also true, however, that in this group non-attendance as a factor causing non-promotion becomes a concomitant factor with mental dulness, lack of application, poor teaching, or too high a standard, and a few minor factors, so that its exact measure cannot be determined in this connection.

The attendance of boys and girls of the promoted class differs very little. The total difference in the first seven grades is only .4 per cent, both attending approximately 91 per cent of the time. The actual losses sustained in each of these seven grades are shown in the following table:

TABLE XLIII.—TOTAL NUMBER OF DAYS LOST PER THOUSAND
BY PUPILS OF THE PROMOTED GROUP IN THE FIRST SEVEN
GRADES.

Grades	Days lost per thousand
1	135
2	94
3	95
4	96
5	79
6	69
7	61
Total	92

Of the non-promoted class there is a decided difference in
some of the grades, between the attendance of male and female.
The girls of the first grade lost 54 days more per thousand than
the boys, and yet only 28 per cent of the girls spent two years
and over in this grade, as compared with 34 per cent of the
boys. Approximately the same is true of the third grade in
which the loss of days per thousand is 49 more for the girls,
although 1.4 per cent more boys spent two years and over in the
grade. The greatest difference is in the eighth grade, in which
the girls missed 75 days more per thousand than the boys. Only
in grades two and six did the boys lose more days than the girls,
19 days in the former and 10 days in the latter.

TABLE XLIV.—TOTAL NUMBER OF DAYS LOST PER THOUSAND
BY THE NON-PROMOTED GROUP.

Grades	Male	Female	Average
1	230	284	257
2	158	139	149
3	151	200	176
4	134	149	142
5	169	194	182
6	133	123	128
7	114	158	136
8	87	162	125
Average	169	195	182

Taking the attendance of the eight elementary grades of the
non-promoted group as a whole, the loss per thousand was 169

for the boys and 195 for the girls, a difference of 26 days, although 2.1 per cent more of the boys spent two years and over in the same grade. The average total loss for this group was 182 days per thousand, almost twice as much as for the promoted group. Subtracting the losses in days of the promoted group from the non-promoted, and stating them in order from the first to the seventh grade, we have respectively 122, 55, 85, 46, 103, 59, and 75 days, a total average difference of 78 days per thousand.

Contrary to expectation, orphanage does not seem to be a direct cause for irregular attendance or non-attendance. The average attendance of 354 orphan boys was 171 days and of 364 orphan girls 170 days. The average attendance of the promoted boys was 177 days and of the non-promoted 162 days, a general average of 169.5 days. Of the promoted girls the average attendance was 176 days and of the non-promoted 157 days, a general average of 166.5 days.

On the basis of $1.54 a month per child, the rate given for February, 1906, the amount of money spent during 1907-1908 for the education of the 6709 boys and girls included in the above discussion was $103,318.80. Of this amount $75,290.60 was spent on the 4889 boys and girls who belonged to the promoted group and $28,028.00 on the 1820 of the non-promoted group.

If we assume that the average degree of mental development per day of those who are instructed, is commensurate with the amount of money provided by the Board of Education for that purpose, we have also to assume a synchronous loss for all pupils not attending, at least considered from the standpoint of the child. Of course it is evident that in many cases the number of absences means a proportionate increase in the amount of individual attention per child of those present, but for the absent ones they are losses nevertheless.

The economic loss thus incurred by the promoted group who missed 9.2 per cent of the time is $6,926.73, and of the non-promoted group who missed 18.2 per cent of the time $5,101.09, a total loss of $12,238.81. Reduced to the average loss per child, we have $1.42 for the promoted group and $2.81 for the non-promoted, just about twice as much as for the preceding group.

VII.

Summary.

The historical discussion of the condition of the Reading public schools from 1903 to 1908 based upon the data of enrolment, preceding the school census, showed these years to be the formative period of a vastly better and more "up-to-date" system of instruction. They represent the "working out" period of the new system, during which new conditions were constantly arising to demand the closest kind of supervision. On account of the regrading moreover, the continuous, successive, upward increases in the enrolment from the lower to the upper grades were abnormalities which more or less obscured the real merits and shortcomings of the new system, in augmenting the per cent of retention to the upper grades.

In view of these unstable conditions it may be premature to comment on the methods of teaching or the system now in vogue. Nevertheless, the following facts were observed:—

1. The shortcomings of the various data of enrolment are to be noted and the discrepancies which arise from them when not duly considered.

2. The February enrolment is the highest for the first four grades. From then on to June there is a total decrease of 19.6 per cent. For these same grades the June enrolment is 13.3 per cent less than the October enrolment.

3. For the upper three grades there is a continuous, total average decrease from September to June of 20.6 per cent, the largest monthly eliminations being for the months of December and March.

4. The total enrolment in the elementary grades, including both public and parochial schools, has decreased on the average 123 per year during the last three years (1905 to 1908).

5. Since 1903 there has been a continuous, successive, upward increase in the enrolment from the lower to the upper grades.

6. The enrolment in the boys' high school has increased 55.4 per cent since 1903, and the girls' high school 27 per cent.

7. The boys lost more time in the lower grades than the girls; 8.1 per cent more in the elementary grades are retarded,

6.1 per cent less are of normal age, and 2 per cent less are below normal.

8. The difference between the October enrolment and the average yearly enrolment from 1903 to 1907 increased uninterruptedly from a difference of only .7 per cent in 1903 to 6.6 per cent in 1907.

9. The pupils enrolled at the opening of the Polish parochial school in 1905 were largely drawn from sources other than the public schools, but those of St. Joseph's parochial school were drawn from the public schools.

10. Distributed on the basis of age, the number of pupils increases to the twelve year olds, but is rather uniform from eight to twelve. On the basis of the number of twelve year olds, 16 per cent are eliminated at thirteen years of age and 32 per cent at fourteen. Approximately 215 leave at the age of thirteen and 430 at the age of fourteen.

11. The maximum retardation for the girls is in the fourth grade and for the boys in the fifth grade, in which on the average 44 per cent are retarded. Taking the eight elementary grades as a whole, 63.5 per cent are of normal age, 30.4 per cent above normal, and 6.2 per cent below normal.

12. The perceptible elimination among the girls begins in the fifth grade and among the boys in the sixth grade.

13. On the basis of age the average decrease in the per cent of normal age from the six to the fourteen year olds is 7.5 per cent and the average increase in the group above normal age from eight to fourteen is 8.7 per cent.

14. On the average 1.7 per cent of the pupils enrolled in the elementary grades in 1907-1908, completed the grade in a half year, 72.3 per cent in the allotted time of one year, 7.4 per cent in a year and a half, and 18.6 per cent spent two years and over in the grade.

15. The course of study or method of teaching in the second grade is best adapted for the progress of the average child. Twenty per cent more than in the first grade completed it in one year, 8.3 per cent more than in the third, 7 per cent more than in the fourth, and .4 per cent more than in the fifth.

16. On the average 1.6 per cent more of the girls in the elementary grades made normal progress, and 2.1 per cent less spent two years and over in the same grade.

17. Five and eight-tenths per cent of the pupils enrolled in the elementary grades gained time, 34.7 per cent made normal

progress, and 59.5 per cent lost time, of whom 6.8 per cent or 331 boys and 224 girls lost three years and over, and 78 boys and 53 girls, or 1.8 per cent, four years and over.

18.   At $6.00 per term for each child, the total amount gained is $4326 and the amount spent on repetition $88,674.   The average cost per boy was $45.74 and per girl $45.02.

19.   The January enrolment for the first term and the June enrolment for the second term form the fairest bases for computing the percentages of promotion.

20.   The midyear system of promotion lacks as yet full installation.   Only 7.6 per cent were promoted to a higher grade at the end of the first term and 16.4 per cent to a higher class as over against 65.1 per cent to a higher grade and 8.3 per cent to a higher class at the end of the second term.

21.   The fact that midyear promotions are made only in the first five grades tends toward congestion in grades four and five and is responsible for a considerable number of half year losses.

22.   Up to 1907-1908, entrances of beginners were not confined to the first month or two of each term, as is advisably done now.

23.   Of those who entered the first grade in February, 1907 and 1908, only one in eight completed the grade in one year, due to lack of full installation of midyear promotions.

24.   Less than half of the teachers in grades two and three promoted in February, 1908, and approximately two-thirds of the girls and three-fourths of the boys who entered the fifth grade in February, 1908, lost the half year.

25.   The pupils below normal age entering the first grade have been reduced more than ten per cent during the last eight years.

26.   During this same time the normal age group has increased ten per cent.

27.   The pupils who spent two years and over in the same grade were on the average six-tenths of a year younger than those who completed the grade in a half year.

28.   The variations in the rate of increase above the normal age for the group who spent two years and over in the same grade, indicate differences in the adaptation of the course of study or method of teaching, to the average mental status of the pupils enrolled.

29.   The average age of entrance to the first grade is practically the same for boys and girls, 6.28 years for the former and 6.27 years for the latter.

30. The maximum effect of retardation in increasing the average age is .70 of a year in the fourth grade for the boys and .50 of a year in the fifth grade for the girls, a difference of .20 of a year.

31. The maximum effect of elimination in decreasing the average age of the grade is .30 of a year for the boys and .40 of a year for the girls, a difference of a tenth of a year, both being in the seventh grade.

32. Of those who entered the first grade below normal age, 24.5 per cent made normal progress, 39.6 per cent lost one year, and 36.0 per cent lost two years; and of the normal age group 40.8 per cent made normal progress, 33.7 per cent lost one year, and only 21.6 per cent lost two years.

33. By the time the eighth grade is reached, 25.9 per cent of the class have been admitted from other schools.

34. Approximately 20 per cent of the losses sustained by grades five to eight are due to a change in residence.

35. Approximately 31 per cent of those who leave the public schools go to work, 17 per cent leave the city, and 21 per cent enter the parochial schools.

36. Twenty-four per cent of the boys who go to work and 21 per cent of the girls do not get beyond the fourth grade, and 43 per cent of the boys and 46.6 per cent of the girls do not get beyond the fifth grade. Exactly one-fourth of the girls leave in the fifth grade and 32 per cent of the boys leave in the sixth. Only 9.1 per cent of the boys and 15.7 per cent of the girls get to the eighth grade, an average of 12.4 per cent.

37. Twenty-five per cent both of those who leave the city and of those who enter the parochial schools leave in the first two grades; 27 per cent of the former and 40 per cent of the latter leave in grades three and four.

38. Only 15 per cent of the boys who left to go to work and 16 per cent of the girls made normal progress, 47.8 per cent of the boys and 46.3 per cent of the girls lost two years and over, 23.9 per cent of the boys and 17 per cent of the girls lost three years and over.

39. The attendance of the promoted pupils is 38.6 per cent better than the attendance of the non-promoted.

40. Of the promoted group 74.4 per cent attended 170 days and over; 20.5 per cent from 140 to 170 days; and 5.1 per cent less than 140 days.

41. Of the non-promoted group only 54.6 per cent attended

170 days and over, 27.6 per cent from 140 to 170 days; and 18 per cent less than 140 days.

42.   Ninety-four and nine-tenths per cent of the promoted group attended 70 per cent of the time and over, and only 81.2 per cent of the non-promoted.

43.   Of the promoted group only 5.1 per cent attended less than 70 per cent of the time and 18.6 per cent of the non-promoted.

44.   At least 20 per cent of the non-promotions are due to irregular attendance or non-attendance.

45.   The promoted pupils of the first seven grades missed 9.2 per cent of the time, and the non-promoted (including the eight elementary grades), 18.2 per cent.

46.   The attendance of the promoted group is practically the same for boys and girls, but of the non-promoted group the girls missed 2.6 per cent more days than the boys.

47.   On the average, orphanage is not a direct cause for irregular attendance or non-attendance.

48.   On the basis of $1.54 a month per pupil, the total loss sustained through irregular attendance or non-attendance was $12,-238.81 in 1907-1908, an average loss of $1.42 for each promoted child and $2.81 for the non-promoted.